MADRAS FISHERIES BULLETIN No. 7

THE SACRED CHANK OF INDIA

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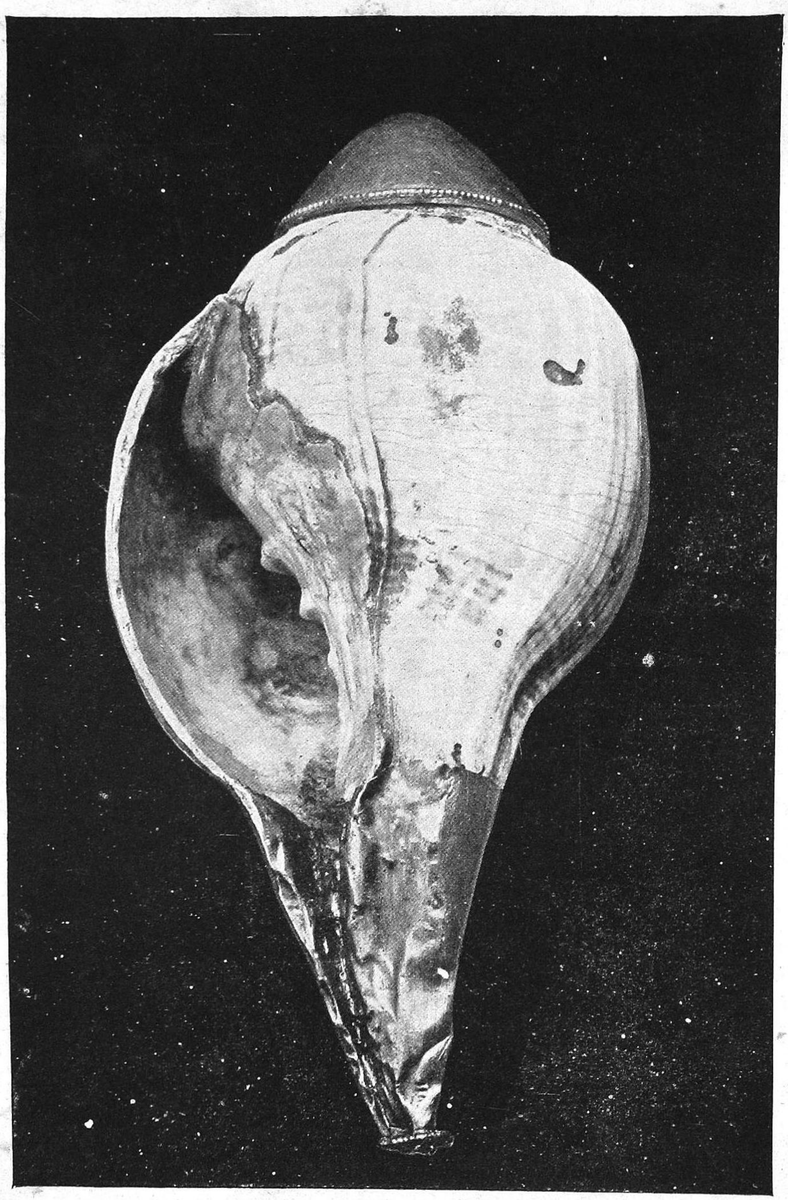

A HANDSOME SINISTRAL CHANK (*Turbinella pyrum*) POSSESSED BY THE SATYA BHAMAJI TEMPLE, BET, KATHIAWAR.

MADRAS FISHERIES BUREAU.

BULLETIN No. 7.

GOVERNMENT MUSEUM
11 JUN 1930
MADRAS

THE SACRED CHANK OF INDIA:

A MONOGRAPH OF THE INDIAN CONCH (TURBINELLA PYRUM)

BY

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Superintendent of Pearl and Chank Fisheries to the Government of Madras.

ILLUSTRATED WITH 18 PLATES.

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REFERENCES.

The two most frequently quoted works in this monograph being :—

THURSTON, EDGAR.—"The Castes and Tribes of South India," 7 Vols. Madras, 1909, and

RISLEY, H. H.—"The Tribes and Castes of Bengal," 2 Vols. 1891,

references thereto are abbreviated to the author's name followed by the number of the volume and the page therein quoted, *e.g.*, Thurston, II. 21.

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THE SACRED CHANK OF INDIA

BY

JAMES HORNELL.

INTRODUCTORY.

Until the present time no monographic account has been attempted of the Sacred Chank or Conch (*Turbinella pyrum*, Linn.) in its intricate and intimate relationship to almost every phase of Hindu life; scanty too are the casual references scattered through the immense mass of literature that attempts to chronicle and explain the growth of present-day Indian customs. The collection and co-ordination of the material now presented to the reader has been a task of no light character and I am deeply conscious of the incompleteness of the whole, of the many gaps I am unable to fill up and of how inadequate is my scholarship to deal with certain aspects of the subject in a really satisfactory manner. However we are well aware how often the foolhardy step in where angels fear to tread and as I have occasionally seen eminently successful results attend on such precipitate recklessness I trust that at least a modicum of success may crown the attempt I make in the following pages to open up a by-path in the life and history of the Indian world. Almost every day some new fact comes to my knowledge emphasizing the large place in the ordinary life of the people taken by this shell, but as other enquiries call for my attention, with some reluctance I feel compelled to cry a halt and to present the material already collected in the best form I am able to cast it, leaving for others the task of rounding the corners and filling in interstices.

Several interesting problems remain partly or wholly unsolved. Among others may be mentioned (*a*) the reasons for the cessation and disappearance of the chank bangle industry from the South of India, the Deccan,

Gujarat and Kathiawar, (*b*) the causes which made the chank fisheries so profitable in the early years of the nineteenth century, and (*c*) the question whether the use of chank bangles among a few sections of several castes in South India is in the nature of a survival of a once universal custom or whether it had primarily a totemistic significance. The origin of the custom of wearing broad chank bangles by the Buddhist women of Thibet and the Himalayas is another obscure point.

At some future date I trust to be able to publish an account of the anatomy and life-habits of the chank, together with precise details of the many interesting local races or varieties which are found to characterise different localities in Indian littoral waters.

To all who have rendered assistance I offer very grateful acknowledgment of many kindnesses received; my office staff have in particular been most zealous in exploring all the bye-ways of chank-lore within the bounds of their opportunities and it gives me special pleasure in having this opportunity to express my thanks for their most valuable help—my Sub-Assistant, Mr. J. A. Fernandez, more especially has rendered noteworthy help in all that relates to the connection which has subsisted between the Parawa community and the chank industry from time immemorial.

PART I.—THE CHANK FISHERIES OF INDIA AND CEYLON.

Six distinct chank fisheries are carried on at the present day in India; ranked in their order of importance they are:—

(*a*) Tinnevelly (usually called the Tuticorin fishery),
(*b*) Ramnad (with Sivaganga),
(*c*) The Carnatic coast (South Arcot and Tanjore),
(*d*) Travancore,
(*e*) Kathiawar,

to which is to be added a large one in the north of Ceylon.

Without exception the chank fishery in each of these localities is considered as a royal prerogative, the monopoly of Government. In practice this prerogative is variously exercised. In Tinnevelly, the Madras Government work the fishery departmentally through an officer of the Fisheries Department styled the Superintendent of Pearl and Chank Fisheries. On the Carnatic coast the shells are either (in Tanjore) bought at fixed rates from the fishermen by the Customs Department on behalf of the Fisheries Department, or else (in South Arcot) the exclusive right to collect is farmed out to a renter for a term of years. The latter administration of the prerogative is also in force in Okhamandal (Kathiawar) where the Gaekwar of Baroda exercises sovereign rights in the local fishery. In Ceylon the renting system was in force till 1890, when it was abandoned in favour of an export duty, a method of securing Government revenue from this source which has continued ever since. In Travancore, the dues of Government are collected in the same manner as now prevails in Ceylon.

(1) THE TINNEVELLY CHANK FISHERY.

This fishery is the only one that is carried on systematically and with a definite organization. As detailed elsewhere (p. 43), references in Tamil classics make it clear that this fishery was being prosecuted with vigour under Pandyan rule as long as 1,800 years ago; in those days the head-quarters was at Korkai, an important city of traders, jewellers, pearl-fishers and chank-divers.

It was located at the mouth of the Tambraparni river which then entered the sea some 12 miles southward of Tuticorin, the present head-quarters of the fishery. With the growth of the river's delta and the deflection of the principal channel the city was shifted northwards some 3 miles to Kayal, the Cael visited by Marco Polo in the end of the thirteenth century (1292). In turn, Kayal ceased to exist as a seaport and Pinnacoil (Pinnai Kayal, the town "behind" or across the Kayal or backwater ?) with Kayalpattanam and Tuticorin divided the heritage of Kayal amongst them. This passing away of Kayal as a commercial emporium took place probably shortly after the arrival of the Portuguese about 1523, the end hastened by the decay of Pandyan power which subjected the district to the spoliation of Muhammadan invasion and left it a prey to the viceroys of Vijayanagar.

For at least 200 years prior to the arrival of the Portuguese in India, the growth of Muhammadan power on the coast had been progressive; Arabs had long traded with Kayal and Korkai and now, instead of returning home periodically, they began to marry with the natives and to settle in the seaports, where they and their adherents entered into competition with the Parawas in their hereditary occupations as pearl and chank fishers.

When the Portuguese Mission under Manuel de Fries, sailing round Cape Comorin in 1523—1525 * on their way to search for the remains of St. Thomas on the Coromandel coast, arrived off Kayal, they found the Parawas hardpressed by the Arabs and their Muhammadan converts obtained partly from the ranks of the Parawas themselves. This antagonism was most opportune for the Portuguese who had come with the express intention of seizing the pearl fishery and had aboard Joao Froles already appointed Captain and Factor of the Pearl Fishery by the King of Portugal. The command of the sea being with the Portuguese, they had no difficulty in exacting a rent from the headmen of the coast of fifteen hundred cruzados per annum, and Froles was left with a small force to enforce due payment.

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* According to Gaspar Correa in "Lendas da India," it was in 1523 that King John III of Portugal commissioned Manuel de Fries on this quest which brought him eventually to Mylapore, now a suburb of Madras, hence it probably would not be till 1524 or 1525 that he actually reached the Gulf of Mannar.

Whether the chank fishery was included in this rent we have no means of knowing. Eventually when the new comers took actual possession of the Tinnevelly coast line—the Pescaria or Fishery coast as they called it—and settled agents and troops at the principal ports, the chank fishery was certainly made to contribute to the revenue, being farmed out to a group of wealthy merchants.

With the definite seizure of the coast in 1532 the status of Kayal rapidly changed. The Parawas who by the terms of the treaty of 1532 were now the sworn allies of the Portuguese and had sealed the compact by going over in a body to the Roman Catholic faith, required the protection of the guns of the Portuguese ships and moved from Kayal now left two miles inland by the growth of deltaic deposits and founded Pinnakayal on the sea-shore about two miles distant. The local Muhammadans left about the same time and founded the new port of Kayalpattanam originally called Sonagapattanam (*i.e.*, "The Muhammadans' Port"), five miles to the south of Pinnakayal.

Pinnakayal thus became the head-quarters of Portuguese domination on this coast and so remained till about 1580, when they were transferred to Tuticorin. Unfortunately no information as to the importance of the chank fishery during Portuguese supremacy is available—the Dutch who took possession of the coast towns in 1658 purposely destroyed the records of their predecessors wherever these fell into their hands.

Under the Dutch the chank fishery had considerable value; it was leased out regularly to renters, the shells being forwarded by sea to Bengal as in the days of the Portuguese.

Father Martin, a French missionary who wrote an account of the pearl fishery carried on in 1700 off Tuticorin, mentions that at that time the "conch-shell fishery was also theirs (the Dutch) within the same limits as the pearl-fishery and yielded a considerable profit."

The Portuguese during at least the first 50 years of their domination exercised much greater and more effective control over the coast than did their successors the Dutch. They completely crushed the power of the coast Muhammadans and were able to defy the lieutenants of

the Madura Nayaks during this period. By right of effective occupation they enjoyed the full benefit of the pearl and chank fisheries, but long ere the Dutch dispossessed them they had to give both the Nayak of Madura and his feudatory, the Setupathi of Ramnad, various privileges in the former, though it appears they managed to retain the whole of the profit from chanks. To this disputed heritage the Dutch succeeded and throughout the whole of their control of the Tinnevelly pearl and chank fisheries they had to meet the continual claims first of the Madura Nayaks and afterwards of the Nawabs of the Carnatic. Control of the sea enabled them to retain their hold on the fisheries though even then they did so only by temporizing with the lords of the land. With the advent of a stronger land power in the Nawab of the Carnatic the claim of the native rulers to the possession of the pearl and chank fisheries was pressed with greater vigour. The dispute as to their mutual rights reached a head in 1768 when at the Ceylon Pearl Fishery held at Arippu that year, violent disputes took place between the Dutch officials and the Nawab's envoys who went to the fishery attended by a large body of armed sepoys and tried to carry matters with a high hand.

As a consequence, the Dutch, with their usual caution and fear for the interruption of their cloth monopoly in Madura, loth to bring the matter to a crisis, preferred to let the pearl fisheries remain in abeyance till a settlement could be effected on what they considered equitable terms—terms which meant the curtailment if possible of the Nawab's pretensions.

So matters stood at a deadlock when in 1782 the Honourable East India Company took Tuticorin from the Dutch, holding it till 1785. During this period, the Nawab's revenues being assigned to the company under the agreement of 1781, Mr. Irwin, the Collector of Assigned Revenue, held a pearl fishery in 1784, carried on departmentally, and also conducted a yearly chank fishery, the profits, which amounted to 67,860 pagodas, being credited to the head of assigned revenue.

In a report to Government dated 1783, Irwin observed that "a notion, I understand, has been entertained at the Presidency that the Dutch will resume the pearl and chank fisheries with their settlements on the coast of

Tinnevelly. On the spot where I humbly apprehend the truth can be best deduced, far different sentiments prevail. The chank was certainly fished by the Dutch, but whether by the consent or inattention of the Nabob, I cannot pretend to decide; but it is well known the pearl fishery was entirely stopped by the just demand made by His Highness on the fisheries. But I conceive these points to be totally foreign to the question. Though the generosity or weakness of the Nabob made him forego his right to the valuable fisheries on his coast, those rights are original and valid and it remains for the company to determine whether the same attention shall be paid to this branch of revenue as to every other included in the assignment."

In 1785, Tuticorin was restored to the Dutch and in the following year a provisional treaty was drawn out and executed by Mr. J. Dott on the part of the Nawab and by Mr. Van der Graaf on the part of the Dutch. In this agreement it was stipulated that half the proceeds of the pearl fishery at Tuticorin should belong to the Nawab, but no mention was made of the Ceylon (Mannar) pearl fishery and the entire proceeds of the Tuticorin chank fishery were ceded as an exclusive right to the Dutch. The fisheries were to be let by public sale to the highest bidder. This treaty appears never to have been ratified by the Nawab to whom it probably proved unsatisfactory as it deprived him of all participation both in the Ceylon pearl fishery and in the Tuticorin chank fishery.

Pressed by the Madras Government who wished to see an end to the friction between the Nawab and the Dutch, the Nawab in 1788 made another treaty with the Dutch whereby it was stipulated in article 1, that "the pearl and chank fisheries of Tuticorin shall be equally divided between the high contracting parties. The chank fishery shall, as usual, be let to the highest bidder and the net produce equally divided."

By another article the Nawab confirmed the Dutch in their trading monopoly in Madura cloth—the most lucrative source of revenue to the Dutch Company in their settlement on the Tinnevelly coast. The Madras Government learning of this, vetoed the treaty but its terms were allowed to govern the pearl fishery held off

Tuticorin in 1791, when the net produce was divided equally between the Dutch and Mr. Torin acting for the Madras Government who had assumed the revenues of the Nawab. And in 1794 the Dutch received as their half share in the chank fishery for that year, the sum of 2,000 pagodas. In the next year the Madras Government had again to take possession of Tuticorin from the Dutch to whom it was not given back till 1818.

Upon the rendition of the fort and factory, the Netherlands Commissioner demanded an admission of his right to the whole revenue from the pearl and chank fisheries, a claim which the East India Company resisted as having succeeded to the sovereign rights of the Nawab of the Carnatic. The Madras Government pointed out that the pearl banks being scattered along the coast of Tinnevelly could not therefore come within the limits of any Dutch settlement; that the Portuguese and afterwards the Dutch usurped the command of the whole Gulf, they said was very probable and it was quite probable that the Dutch for a time kept to themselves the whole revenues derived from these fisheries, but as they held them by no deed and by no cession, they might be said to have held them so long only as they could keep them. Voluminous evidence was collected to prove that the native rulers—the Nayak of Madura and the Nawab of the Carnatic had never relinquished their claims to these fisheries and the dispute had been referred to Europe for settlement when, in 1825, the annexation of all Dutch settlements in India rendered it unnecessary to further debate this contention; since 1825 and indeed since 1801, when the Carnatic was ceded finally to the British, the Madras Government have exercised absolute and undivided control of both the pearl and chank fisheries off the Tinnevelly coast.

A summary of the condition of the fishery coast during the Dutch period contained in a letter dated 30th June 1803 from the Collector of Tinnevelly to the Board of Revenue at Madras is so interesting that no apology is needed for its reproduction here. It runs as follows :—

"As the preliminary articles of peace with the French Republic stipulate for the restoration to Holland of all the possessions she held on the coast previous to

the war, I have considered it an important duty to ascertain as accurately as possible the extent of their possessions, the nature of their privileges, the means by which they were acquired and the effects which their unqualified or conditional restoration to Holland is likely to have upon the interests of the British Government in this province.

"When Tuticorin and its dependent factories Poonacoil and Manapaar capitulated to the English in 1795, the Dutch were in the actual possession of the chank and pearl fisheries off the coast of the Tinnevelly province, paying half the proceeds to the Nawab. To preserve these fisheries from depredation, they had employed for a series of years a scattered chain of armed boats extending nearly from Cape Comorin to Pāmban and the owners of country crafts to avoid vexatious delays which their commerce suffered from the search exercised on all vessels passing these boats, did not hesitate to apply to the Dutch Presidents along the coast for passports under their signature—the possession thereof acquired by the payment of a fee exempted them from this vexatious scrutiny.

"The landed possessions which the Dutch had acquired on the coast of Tinnevelly did not extend beyond the ground upon which the small fort of Tuticorin is built . . . . . Upon this and other similar occasions of dispute between the Dutch and the Nawab's manager, the latter did not scruple to refuse to them water and fresh provisions neither of which are of course attainable within the walls of Tuticorin, so that not only their continuance upon this coast in a revenue and commercial character but even their physical existence evidently depends upon the disposition of the ruling authority in Tinnevelly to administer to their wants.

"The town of Tuticorin which is close upon the fort, the Dutch affected to consider under their jurisdiction but the Nawab's Government uniformly opposed this pretension and collected the revenues from the inhabitants residing in it. The grounds upon which they pretended to this assumption of sovereignty over the inhabitants of Tuticorin originates in the majority of the people being of the Parawa caste, a set of men who having been converted to Christianity by the Portuguese

were led from religious motives to look up to the Portuguese as mediators in their concerns with the Government of the country. When the Dutch drove the Portuguese from Tuticorin they found the same necessity of connecting themselves with the Parawars. Without their aid, neither the pearl nor chank fisheries could be of any use to the Dutch. To strengthen the connection with the Parawars material advantages with all the honour they had to bestow were conferred upon the head of this caste whom they styled the Prince Sadi Talavan and the greatest part of the mercantile business of their Government was transacted through them. The residence of the Sadi Talavan when the Dutch obtained the possession of Tuticorin was about 20 miles from it; they however induced him to settle at Tuticorin. . . . . .

"These encroachments appear to have been sometimes tacitly admitted and at other periods of the Mussulman government of the country to have been denied and resisted. If the aumil of Tinnevelly was ignorant of the Nawab's sovereignty over the Parawars or had any reason to court or fear the Dutch, they exercised that power without interruption. But if he was well acquainted with the nature of the Dutch usurpations and was not in want of military stores or money from them, the assumption of this authority was not permitted.

"The history which has been given by the curnam of Tuticorin of the first settlement of the Portuguese and of the Dutch at Tuticorin shows that the pearl and chank fisheries were originally conducted by the Dutch upon certain conditions prescribed by the Hindu Government of the country and that owing to the convulsions which distracted Tinnevelly upon the extinction of the Gentoo sovereignty and the subsequent war of Chanda Sahib and Muhammad Ali, the Dutch drew the revenues of the fisheries of the coast for a time entirely to themselves.

"It was, however, one of the first acts of the Nawab's Government after it became a little established to claim his sovereignty in these fisheries, and this demand continued to be made for several succeeding years without any specified settlement taking place until the

year 1786 when it was mutually agreed between the Nawab and the Dutch Government that each should receive an equal share of the two fisheries, and upon this footing they stood when Tuticorin was taken by us in 1795.

"Besides the factory of Tuticorin, the Dutch had residents and factory houses at Poonacoil, Coilpatnam, Manapaar, Vypaur and Vembar. These comprised the whole of the sea-ports of Tinnevelly and although they pretend to no power over the inhabitants in general they uniformly claimed and generally exercised an authority over the whole of the Parawars therein situated.

"The knowledge of their circumscribed condition would seem a sufficient answer to the arrogant and extraordinary pretensions which the Dutch advance of an exclusive right to regulate the navigation of the bay, to employ the manufacturers upon the coast of Madura and to have their imports and exports passed free of duty. An additional internal evidence of the non-existence of any ancient deed authorising the exercise of these privileges will be found in the different treatment they received at Kilkarry in the province of Rāmnād. There nothing passed to or from them without paying the regular port duties and their engagements with the manufacturers were permitted because they benefited the country, not upon any grounds of an exclusive right to employ them. The Poligar himself being a considerable trader through his servants would not have borne that his vessels would have been impeded in their course, his customs and his fisheries usurped and swallowed up or the employment of his manufacturers left at the mercy of a few strangers, who resided by his sufferance in his country and it is not possible to ascribe either the attempt or the success of this flagrant usurpation in Tinnevelly to anything but the convulsions which attended the downfall of the Hindu Government and the profligacy and ignorance of the succeeding Mussulman reign.

"But in the actual enjoyment as the Dutch were at the time of capitulation of these privileges, it becomes very necessary to be provided in case they should again attempt to exercise them. The chain of boats in the bay of Tuticorin was kept up for the ostensible reason of preventing depredation of the fisheries; experience has

shown that such a precaution is unnecessary. From the time these fisheries came under the Company's management, no such means of preservation have been adopted and no instance of depredation has ever been detected or suspected. The fisheries have latterly yielded five hundred per cent. more to us than they did to the Dutch Government. It hence follows that the means by which the Dutch exercised that sovereignty in the bay is not necessary to the prosperity of their fisheries and ought not therefore to be permitted.

"With no landed possession but that upon which the fort of Tuticorin stands and with no power of jurisdiction even in the village of Tuticorin or any other, with no means of supplying themselves with the common necessaries of life, but from the Company's districts and no divers to work in the fisheries but those who inhabit the Company's villages, it is very evident that to make the possession of Tuticorin desirable to the Dutch or the fisheries upon the coast of Tinnevelly a source of revenue to them depends upon the disposition of the British Government to befriend them.

"Though not possessed of any territory within Tinnevelly district except the small spot about 1,000 yards square on which the fort of Tuticorin stood, the Dutch claimed the right to the pearl and chank fisheries on the coast of Tinnevelly, half the proceeds of which they paid to the Nawab in consideration of being allowed the sovereignty over all the Parawars in the district and the right to employ the manufacturers of cloth to the exclusion of all other European nations."

From 1801 when the sovereignty of the Carnatic passed from the Nawab to the East India Company we have complete records of the net proceeds of each season's chank fishery; the table appended gives the yearly net revenue together with the amount yielded by the pearl fisheries held during the same period. Reference to this shows that during the first 27 years of British administration the chank fishery enjoyed a period of unexampled prosperity. During the whole of this period on one occasion only did the net revenue fall below Rs. 17,000 per annum, while in 13 years the net profits exceeded Rs. 30,000 per annum. The most prosperous season was that of 1824–25 when the net revenue

amounted to Rs. 43,500. The total net profit of this fishery for the 27 years noted amounted to no less than Rs. 15,26,336 against a sum of Rs. 15,64,071 obtained during the same period from the pearl fishery.

Thereafter, with the exception of a series of eight years between 1843-44 and 1850-51 and the year 1874-75 the revenue obtained during the period when the fishing was rented out dropped in a remarkable manner to a very low average—reaching the minimum of Rs. 1,000 in 1833-34, while the fishery was actually discontinued during the year 1851-52. Throughout the whole period comprised between 1801 and 1876, the fishery was farmed out to the highest bidder, who undertook the entire organization and conduct of the fishery, Government exercising no control over the operations. During the later years of this period the farmers of this monopoly were usually either Mr. Cocq or Mr. Barter, two merchants of the old school long resident in Tuticorin.

With the knowledge we now have it is very clear that the profits reaped by the renters were comparatively very great, especially as the rate they paid the divers was two-thirds only of that now ruling. It was therefore greatly to their interest to be on good terms with their employees and the older men among the divers love to dwell upon what they consider the good old times when rum and arrack flowed freely every day and sheep were slaughtered for the Christmas feast. It appears indeed to have been the practice to make a free distribution of a large tot of arrack to the men immediately they reached shore, with various gifts and loans from time to time and particularly of sheep at Christmas time. So although the men received Rs. 20 only (or even less) per 1,000 shells instead of the Rs. 31-4-0 now given, the glamour of this memory of the era of free drinks makes them sigh for the good old days, now gone for ever.

Mr. Cocq appears as the renter first on the scene. Originally he worked the fishery through four (?) sammattis who bought up the shells at the lowest rates they could manage to arrange and resold to their principal at Rs. 20 per 1,000. When Mr. Barter, a cotton presser who owned the buildings now occupied by the Caldwell High School in Tuticorin, entered into competition with

Mr. Cocq, intense rivalry eventuated and the divers scored heavily. Each attempted to go one better than his rival; the divers had a present of Rs. 10 each given them at the beginning of the season, Rs. 5 at the new year and 8 annas at the feast of our Lady of the Snows on 5th August besides a sheep to each canoe at Christmas. Two casks of rum were always on tap in Mr. Barter's compound, and each diver on reaching shore was allowed to fill a small chatty from one of the casks. This spirit is said to have been more powerful than arrack and probably one of its effects was to render the divers more tolerant during the gauging of the shells than they are now-a-days. When a marriage or a funeral took place, the renter could always be squeezed for a considerable sum, which he took his chance of recovering, in part at least, when catches were good. The two rival farmers had each his own particular set of divers and when Mr. Cocq had the farm, the men under his competitor were given by the latter some regular employment such as collection of coral blocks from the reefs for building purposes. When fishing took place on the far away beds, and the men camped at some island convenient to their work, they were given woollen cloths to protect against dews and chill winds. The Cocq men are said to have been distinguished by having red cloths, while the Barterites were clad in sombre black. The story runs that in one year the Government farmed the fishery by taking a large fee as licence for each canoe allowed to fish and so for this season Barterites and Cocquettes both joined in the fishery. But, for this occasion only, Mr. Barter paid his men Rs. 40 per 1,000 while Mr Cocq paid only Rs. 30 with the result that the latter's men would transfer at sea some of their catch to their friends working for the rival who gave a higher price and adjust the matter ashore to mutual satisfaction over a convivial glass of arrack or more lengthy draught of toddy.

Certain difficulty with the renters and the belief that direct Government management of the fishery would result both in increased profit to Government and improvement in the conditions under which the divers worked, led the authorities to abandon the renting system in 1876. Accordingly, during the season 1876-77 the fishery was worked departmentally, the Port Officer of

Tuticorin being given the duty of organizing the work on the new lines as he was already *ex-officio* the Superintendent of Pearl Banks, a designation which eventually was amended to that of Superintendent of Pearl and Chank Fisheries. To Captain Phipps, who by the way was probably the most capable and most conscientious Superintendent the Government have ever had, fell the duty of organizing the new arrangement, and one perforce feels sympathy with his troubles, when we read in his report to Government in 1878 the following plaint :—"Government will believe me when I say that the successful management of a large number of ignorant divers, *who are nearly always partly intoxicated*, requires the exercise of unvarying good temper and patience." The same sentence might well find place in every annual report at the present day!

The rates paid for shells and the general arrangements of the fishery remained the same till 1883-84 when the divers by threat of abstention forced a concession of an extra Rs. 5 on the rate for shells which was thus raised to Rs. 25 per 1,000. During the next season no fishery was held, the result being to bring the divers to a more reasonable frame of mind; the former rate of Rs. 20 per 1,000 was accordingly reverted to and this continued to rule till 1900-01 when the divers struck work for a substantial increase in pay. As it was not immediately granted the majority of the men went to Travancore to try their luck in the chank fishery there. Consideration of the notable increase in the local price of food-stuffs and of the increasing unpopularity of chank-diving, led the Government to agree to a very considerable increase, the rate being raised from Rs. 20 to Rs. 31-4-0 per 1,000 or half an anna per shell. The men were fully satisfied and not only did all those on strike come back but in addition numbers of other men capable of diving joined the fishery and from an average of seven canoes taking part in the fishery for several years prior to 1901, 10 joined in this year while the next season the number registered rose to 12 carrying in all about 80 divers.

In 1909 the management of the fishery was transferred to the Fisheries Department, the Marine Assistant to the Honorary Director being appointed as

Superintendent of Pearl and Chank Fisheries. This change has enabled greater attention to be given, alike to general management and to the disposal of the produce to the best possible advantage. The results have been most gratifying for, in spite of difficulties due to a gradual decrease in the number of men available as divers and one season when the weather conditions were exceptionally adverse, the results of the four years of administration under the Fisheries Department have yielded a net profit to Government of Rs. 78,311-13-1, a higher aggregate than for any previous period of four consecutive years during the whole of the time Government have worked this fishery departmentally. The only comparable period is that of 1880-1884 when a total of Rs. 71,481-15-9 was obtained. During the latter period, however, lower rates were paid to the divers, so if rates were equalized the comparison would be still further to the credit of the present system.

The factors against good results comprise head-winds, rough weather at sea, the cloudy condition of the sea, chilly water, morning calms which prevent the canoes from reaching the fishing grounds, the presence of sharks and of shoals of stinging jelly fishes and, most potent of all, the counter attraction of a pearl fishery. The seasons vary greatly and there is a marked periodicity in the alternating series of good and bad seasons which reminds one of the periodicity characterizing the occurrence in series of productive pearl fisheries. The undue prolongation or intensity of the rainy season has most prejudicial influence upon results; the shallow littoral waters where the beds lie (3 to 10 fathoms) remain chill far into the fishing season, the river floods cause discoloration of the sea particularly off the mouth of the Tambraparni and the absence of bright sunshine depresses the divers and renders them disinclined to regular work and difficult to deal with. Rough weather, provided the sun shines and the sea be warm, is less prejudicial than would be expected. It is a standing surprise to me to see in what rough seas the men will work, often 5 to 7 miles from land, and still bring in good catches, a fact proving the good qualities of the fishing canoes used on this coast. Early morning calms are much more prejudicial and cause much loss of time

in some seasons. The hours of diving are confined to the hours between 7 A.M. and 1 P.M., and if calms prevail the divers must either stay ashore and lose their entire day or must fatigue themselves rowing their boat the six to twelve miles that intervene between the shore and the fishing grounds, where too they may not arrive till 10 A.M. or even later. When the Government took over the actual working of the fishery, a small schooner, the "Margaret Northcote" equipped with auxiliary steam, belonged to the Pearl Fishery Department and this vessel in spite of her low horse-power, 12 only, did useful work in towing the divers' canoes to sea when calms prevailed—a great boon to the divers. In 1893 the paddle-wheel steamer "Margarita" replaced the "Margaret Northcote" but as her working was costly in fuel, she was seldom used for towage. When the Fisheries Department took control in 1909, one of the first steps taken was to sell the "Margarita" and obtain a motor launch specially adapted for the towage of canoes, as it was recognized as vitally important that the great losses caused by morning calms must be remedied as far as possible if the fishery were to be improved in its financial results. Not only was the direct loss, due to the smaller number of shells collected, in question; the discouragement felt by the divers as day after day they saw lovely fishing weather wasted through their inability to reach the beds in time, was a more serious matter. The new arrangement proved so satisfactory, after two seasons' trial, that a still more powerful launch, the "Sutherland," was stationed (1911) at Tuticorin, in order to further expedite the arrival of the divers on the fishing grounds when sail-power was useless.

The danger from man-eating sharks is slight; sharks of dangerous species are seldom seen in the neighbourhood of the chank beds but when a suspicious fin is really seen, the divers stop work and are disinclined to resume for several days. Tamil divers never make any effort to kill or drive away a shark themselves. In some cases, particularly if the season is drawing to a close and they are willing to see it end, they use the appearance of a shark as an excuse to clamour for the closure of the fishery—indeed I have strong reason to believe they

sometimes cry "shark" as others have cried "wolf, wolf" when there was no wolf.

Until a few years ago whenever large sharks did appear the men were accustomed to have recourse to wizardry for help against the intruder. The members of a certain Parawa family called Kadalkatti ("Tiers of the sea") accredited with power over sharks, were appealed to and propitiated with gifts that they might exercise their powers. Mantrams were said, and paid for, and the divers were told that the danger was averted. If the shark declined however to depart the usual excuse of an adverse influence was alleged and means were taken to combat this. As a man-eating shark finds little food on the fishing grounds it seldom stays long and the wizard thereby becomes justified in the eyes of his clients. Both wizard and divers were Parawas and Roman Catholics but it goes without saying that the parish priest was kept in ignorance of the proceedings.

The Kadalkattis were also credited, as the name implies with power over the winds and currents and, until the male members of the family died out a few years ago, they were employed to procure a change of weather if head winds seriously interfered with fishing operations. Unseasonable cloudiness of the sea, preventing the divers from distinguishing objects on the bottom, was also believed to be within the power of the Kadalkattis to disperse. These wizards were in consequence people of some importance and were salaried by the chank fishery renters prior to the time of direct Government management in 1876. To-day the family is extinct in the male line and the profession of shark-charming has become lost. Not so the control of the winds. Various men in Tuticorin both Roman Catholics, Hindus and Muhammadans still claim this power and several instances have come under my personal observation. The most noteworthy is one concerning the crews of several canoes who had been employed in collecting coral stone for the bridge works at Pamban. Having been summarily dismissed for misconduct, they were anxious to return home as quickly as possible. But the wind was dead ahead and after lying wind bound for many days they sent word of their predicament to Tuticorin. The best wind-wizards were sought out and five left for

Pamban at the end of June 1911 to try their skill. Several were Roman Catholics, one a Hindu, and one a Muhammadan. They did their best, exorcised the contrary spirits that controlled the winds but to no effect, and after a reasonable delay to give the charms time to act, if act they would, the crews of the canoes chased away the discredited wizards with ignominy and insults. Soon after their return home I obtained an ola inscribed on both sides which I have every reason to believe had belonged to one of the five—a Roman Catholic Parawa, who practises as a native doctor. Probably the mantrams inscribed upon the two surfaces were the very ones used fruitlessly at Pamban. The spells are in Tamil and each is prefixed by the Ganesha sign (உ). Both are of Hindu origin, Hindu gods being invoked, but whereas in the one, the object is to still the winds, the other is a recipe for ensuring a change in the coastal current.

The spell for the winds reads thus:—"Let neither wind nor storm continue; let a calm reign over the world. Let neither force nor cajolery prevail against us and by the God who made us, let nothing hinder us. Let neither stones nor wrath, neither force nor arrows prove hurtful to us. And let the tongue of the man who speaks against us be cut into pieces; if there be any obstacles, let them be overcome. And by the Lord Siva that created us all, let there be nothing to prevent us."

The formula to ensure a change in the current is short and most explicit; it reads "With the help of the power of Siva and his consort, with the help of his grace, of his strength and of his priests, (I conjure you) Oh Subramanian, Lord of Earth, Oh Hanuman, and Oh Arjuna, supreme Lord, come, with a current from the south towards the shore" (*i.e.* to the northward).

The calls made upon Hindu gods in spells used at the present day by Roman Catholic Parawas probably indicates great antiquity and may mark them as survivals from that time prior to the Portuguese arrival when, according to Marco Polo, the divers of Kayal had to "pay those men who charm the great fishes to prevent them from injuring the divers while engaged in seeking pearls under water, one-twentieth part of all that they

take. These fish-charmers are termed *Abraiaman* and their charm holds good for that day only, for at night they dissolve the charm so that the fishes can work mischief at their will. These Abraiaman know also how to charm beasts and birds and every living thing" ("The Book of Ser Marco Polo," Yule, London, 1871). Marco Polo's information on South Indian customs is so remarkably accurate in those points where we can check his statements that it becomes reasonably certain that the shark-charmers were Brahman priests (Abraiaman) during the days when the Parawas professed the Hindu religion.

So long as catches are good, no people are less superstitious than these divers—their thoughts revolve around work and toddy alone; with poor results all manner of superstitious crop up—some one has laid a spell on the weather out of spite or they have done some unchancy thing such as meeting a Brahman or a widow when leaving home.

With the approach of the south-west monsoon in May a heavy swell and current from the south are frequently experienced on the chank beds. Not infrequently this current brings shoals of medusæ and siphonophores into the Gulf, and these the divers dread even more than sharks. At times the water is alive with shoals of the frilly *Chrysaora* pulsating their way along or with myriads of the beautiful purple-blue floats of the Portuguese man-o'-war (*Physalia*), and when this happens, good-bye may be said to any further fishing.

But the chief difficulty experienced in the successful prosecution of a chank fishery arises when a pearl fishery takes place the same season. The divers can think of nothing else, and live for weeks beforehand a happy careless idle life on money borrowed in anticipation of the big gains to be had, honestly or otherwise, when the pearl harvest begins. Persuasion is vain under such circumstances and when the pearl fishery begins, the chank one has to be closed. Whether their gains be great or not, the divers at the end of a pearl fishery come home tired out and in no condition to resume the hard labour of chank fishing. The philosophic attitude is to view these interruptions as useful intervals when the chank population may raise up seed to themselves in

abundance and so replenish the sea-bottom with new generations.

The chank fishery although thus beset with its own minor troubles and particular difficulties has been a constant revenue yielder. During the 112 years since 1801 the total *net* revenue, after all expenses have been paid, has amounted to Rs. 15,41,731, as against a net revenue of Rs. 15,64,071 from the pearl fishery.

During these 112 years, chank fisheries were held yearly except on four occasions, 1839-40, 1851–52, 1871–72 and 1884–85, giving 108 fisheries for this period of 112 years. As a contrast only 13 pearl fisheries have been held during the same space of time and as considerable expenditure is entailed annually upon inspection of the pearl banks whether a pearl fishery takes place or not, the absolute profit obtained from the chank fishery considerably exceeds that obtained from the pearl fishery. Thus while both fisheries yield substantial profits to the country, the more showy pearl fishery, invested with the false glamour of a gambler's royal road to wealth, has overshadowed the steady dividend payer which lures no man to ruin with false hopes but pays its way year by year with stolid and assured regularity. Well might Van Imhoff remark when Governor of Ceylon that the pearl fishery is more of glitter than of gold!

As carried on at the present day, the Tinnevelly chank fishery employs an average of 70 divers, so, allowing an average of 4 dependents each, some 350 persons look to this calling for their subsistence, to say nothing of the considerable number who derive substantial indirect profit—notably the arrack renters and the toddy-tavern keepers.

The season opens about the middle or end of October, when the divers come forward with more or less feigned reluctance to register their names for the ensuing season. A present of Re. 1 is given each man in order to buy and prepare his diving rope and other gear while betel leaf and arecanut (*pan supari*) are distributed. An advance of Rs. 2 per man is also usually given, to be recovered when catches become large.

The men provide their own canoes and diving stones, usually hiring the former at Rs. 7 to Rs. 9 per mensem. The usual crew of an ordinary sized diving canoe consists

of six divers and one thodai who tends the divers' lines, drawing up the stone and securing it at the gunwale ready for use again, after each man dives. He also looks after the baling of the boat, the supply of drinking water and such odd jobs. He is paid by a contribution either in cash or in shells from each diver.

When the morning breeze be favourable—a land breeze preferably, the canoes set sail from shore by sunrise, or as soon as all the laggards can be rounded in. Sometimes the thodai has a headache and does not appear, in which case, the divers of his canoe generally disperse and take a holiday ; it does not seem to occur to them to manage without him! When catches are good and winds light, the men go earlier, sleeping on the sands by their canoes till 2 or 3 A.M. when they set off. But the inducement must be considerable or such energy is not possible!

Now that a motor launch is available, the men have an easier time and when calms and headwinds prevail the launch tows the canoes to the fishing ground or until a favourable breeze comes.

Usually a par-mandadi or fisherman-pilot, paid by Government, accompanies the boat to guide the divers to whatever chank bed or pirāl they may fancy. This par-mandadi is usually a line-fisherman with extensive knowledge of all the fishing grounds within a radius of 10 miles from Tuticorin. Sometimes when beds which have a good reputation give poor yields or when a revisit to the place which gave good results the previous day is disappointing, the divers vent their spleen on the par-mandadi in unparliamentary language ; a row ensues and a new par-mandadi may have to be sought for. The buoying of good banks was also carried out during the past two seasons and is to be further developed when a fisheries inspection vessel becomes available. Till a rich bed be found the canoes are allowed to drift, the divers descending from time to time to prospect. When they are satisfied with the result, the canoe is anchored and serious work begins. Under favourable conditions about 25 descents are made yielding anything from nothing to eight shells per dive. Unlike the custom followed in the local pearl fisheries no second line attached to a net bag is employed. On reaching the bottom by means of

his sink stone, the diver quits the stone, which is at once pulled up by the thodai, and swims slowly over the bottom hunting for the brown lump that denotes a shell or for the rut or track the animal makes when slowly crawling about. The local men are good trackers— they follow up the faintest of spoors and many shells are obtained in this way. It is this special skill which enables the local men to hold their own against divers of stronger physique. Thus the Arab pearl-fishers, better divers than the Tamils, take several weeks before they acquire this faculty of tracking home the chank and till they do, their catches are poor.

The divers take very little food with them, but have a hot meal before they set out. They seldom take more than one-eighth measure of rice afloat with them and when the catches are good they frequently throw this overboard. If a man gets 100 chanks he is assured of Rs. 3 for the day's earnings and he argues that if he takes a meal of rice he won't have room for all the toddy he can afford to buy—so the rice goes overboard and the fortunate diver has acquired a first-class gold mohur thirst when he reaches shore.

Between three and four o'clock the little fleet of eight or nine canoes head into the bay before the spanking sea breeze that usually comes on in the afternoon. The Chank Department staff are ready at the godowns which are situated about three-fourths of a mile north of the town in order that the distinctive odour of decaying chanks may not disturb the appetites of the over-dainty. A clerk is there with a big bag of rupees, the rule being to give cash on the spot for all shells brought in; a second clerk or gumastah supervises and assists in the gauging and a peon or counter and one or more lascars examine, gauge, and count the piles of shells as laid out by the divers. Usually each diver works for his own hand and so there are as many heaps as there are divers. The gauging is a ticklish operation and requires great patience and tact on the part of the gumastah and counter as the divers wax argumentative over every shell that is rejected as under-sized (under $2\frac{3}{8}$ inches in diameter) and a wrangle goes on over many of the "worm-eaten" shells which are confiscated as useless. The total catch of each canoe is paid for

in a lump, the head of the crew giving a receipt or making his mark. The division of the money among the individual divers is often protracted and somewhat heated as they are men who are obstinate as mules and do not understand a give and take policy when applied to money matters. Each man wants his full pound of flesh or rather his uttermost pie. On one occasion the money received, after division was made, left a single pie over and how this was to be shared among seven men was a puzzle that caused protracted argument. Eventually a brilliant solution was evolved and they went off and bought a cheroot in the bazaar which was solemnly divided into seven equal-sized fragments and shared out—a most happy consummation whereby no man could grieve that his neighbour had had more than his fair share.

This childish fear of one being favoured more than another is a well-marked characteristic of these men. On several occasions after getting our first motor launch, she proved unable to tow the whole fleet to sea at any reasonable speed in the teeth of a strong wind owing to the weight of the canoes. In consequence the boats got to the fishing ground very late and catches were small. To remedy this as far as possible, I ordered the launch to tow half the fleet only and so secure to these boats a good day's work ; to equalize matters I instructed the tindal to take the other half of the fleet out the second day and so on alternately, returning each day for the second half of the fleet after taking the first lot to the banks. To my surprise the men point blank refused. "Take us all or none" they said ; "by your arrangement some boats will get a good day's fishing and the others nothing ; rather than this should happen we would prefer not be towed at all!" Again, a system for awarding substantial money prizes to the canoes which fished most regularly through a season was refused—the men told me they would be very glad if a present were divided equally among them, but they would have nothing to do with a scheme under which some boats would gain prizes and others none. Suspicion of each other's honesty explains largely, I believe, this dog-in-the-manger attitude.

From their shells the divers usually set aside each day one shell per man as a contribution to the church,

and as some men owe allegiance to the old Portuguese Mission and others to the rival Jesuit Mission, two heaps are made, and the value of these put on one side to be handed over to the respective parish priests. In return the priests give each diver a consecrated candle once a year, which is lit by the bedside during the illness of any in the family. Another voluntary contribution is usually made to the head of the Parawa caste, whose title of Jadhi Talaivan is an old and honoured one. To him the customary dues paid by the divers are two annas per 100 shells paid out of the proceeds. Until recent years this contribution was regularly paid, but to-day the men refuse to pay it to the Jadhi's peon when catches are disappointing or when they are in a crotchety humour as is often the case. In passing it is interesting to note that small dues in kind are also paid irregularly by the net-fishermen, and whenever a dugong is caught, the head is sent to the Jadhi Talaivan as his prerogative.

The gauge used in measuring chanks brought in by the divers is a small wooden board about 9 inches long by $4\frac{1}{2}$ inches wide having a brass bound aperture in the centre, $2\frac{3}{8}$ inches in diameter. Those which cannot pass through this aperture are paid for at the full rate, those which pass being rejected. Of these latter, those over $2\frac{1}{4}$ inches in diameter as measured by a gauge opening of this diameter are confiscated in order to deter the divers so far as is possible from bringing in immature shells to the detriment of the continued prosperity of the beds, while the smaller shells (under $2\frac{1}{4}$ inches gauge) are returned alive to the sea whenever possible. Prior to the great famine of 1877, the divers did not eat the flesh of the chanks, but since that year their habit is to extract on the run home from the fishing ground as much of the flesh as they possibly can with the aid of a pointed iron rod. On arrival ashore each man has a little palmyra-leaf basket more or less filled with "chank meat" (சங்குச்சதை) consisting of the muscular parts—the foot and the head region—for conversion into dried slices to be subsequently sold in the bazaar.

After the shells have been received and payment made to the divers, they are sorted into nine grades for sale purposes, by means of a set of 9 gauges of diameter

varying from $2\frac{1}{4}$ inch to 4 inches, the grades being numbered as follows :—

No. 1	shells over	4 inches	diameter.			
,, 2	over	$3\frac{3}{4}$ inches	and under	4	inches diameter.	
,, 3	,,	$3\frac{1}{2}$	,,	,,	$3\frac{3}{4}$	,,
,, 4	,,	$3\frac{1}{4}$	,,	,,	$3\frac{1}{2}$	,,
,, 5	,,	3	,,	,,	$3\frac{1}{4}$	,,
,, 6	,,	$2\frac{3}{4}$	,,	,,	3	,,
,, 7	,,	$2\frac{9}{16}$	,,	,,	$2\frac{3}{4}$	,,
,, 8	,,	$2\frac{3}{8}$	,,	,,	$2\frac{9}{16}$	,,
,, 9	,,	$2\frac{1}{4}$	,,	,,	$2\frac{3}{8}$	,,

The following table shows the average proportion of shells of the different sizes fished in an average season, 1910–11, viz :—

Grade.	Number.	Diameter.	Percentage.
1	314	Of and above 4 inches.	$\frac{1}{4}$
2	1,130	,, $3\frac{3}{4}$,,	$\frac{1}{2}$
3	3,369	,, $3\frac{1}{2}$,,	1
4	10,153	,, $3\frac{1}{4}$,,	4
5	41,668	,, 3 ,,	15
6	75,725	,, $2\frac{3}{4}$,,	27
7	53,430	,, $2\frac{9}{16}$,,	19
8	69,623	,, $2\frac{3}{8}$,,	25
9	25,918	,, $2\frac{1}{4}$,,	9
	2,81,330		

In addition to the above were :—

22,316 undersized shells (under $2\frac{1}{4}$ inches diameter)

12,952 wormed (of all sizes).

The above gauges are adopted from the gradation of gauge sizes employed by the Calcutta buyers in sorting their shells ; prior to 1910, this sorting of shells was not practised by the Government staff, the shells being divided into three lots only, (*a*) those above $2\frac{3}{8}$ inches diameter, (*b*) "medium" shells, below $2\frac{3}{8}$ inches diameter, and (*c*) wormed shells, and sold *en bloc* on these figures.

Sorting into grades before sale enables purchasers to assess the value of the shells with accuracy and is one of the improvements introduced since the conduct of the fishery passed into the hands of the Fisheries Department.

"Wormed" shells are those tunnelled by the labyrinths made by decalcifying burrowing sponges of the genus *Clione*. The extent of infection varies greatly from bed to bed ; usually it is greatest on the near shore

beds, especially those interspersed with many rocky patches giving foothold to luxuriant animal and plant life. The less mixed the sands of the chank-bed are with islands of coral and sponge life the less infected with *Clione* are the shells. Again, on beds regularly fished year after year the percentage of wormed shells is always low, and the shells of regular size. On beds seldom fished, the proportion of large and badly infected shells is always very high, and remains so till a thorough weeding out of the old shells has taken place.

Tuticorin chanks are noted for their solidity, weight and hardness. Samples of 100 shells containing average numbers of all sizes above $2\frac{3}{8}$ inches diameter have been repeatedly weighed and in all cases the weight exceeded 90 lbs. per 100 shells, the actual average of all lots being 93 lbs. Shells between $2\frac{1}{4}$ and $2\frac{3}{8}$ inches diameter weigh 54 lbs. to the 100 shells.

The chank godowns are large rooms divided into a number of temporary divisions or bins to accommodate the various grades of shells. Cleaning is left to nature which here takes the form of innumerable fly-maggots. These eat out the contents of the shells, windows being thoughtfully provided in the godowns for the entry of the parent flies. The odour evolved from the heaps of shells is twin to that of pearl-oysters when being "rotted;" the local golf links come within 100 yards of the godowns and at one hole there is occasional complaint that the spicy breeze is somewhat rank in flavour.

Previous to 1910, the season's catch was advertised and sold yearly by tender to the highest bidder. In some years (1885 to 1891) the shells were put up to public auction, but this method led to abuse—the rich men buying off competition—and the old system of calling for offers by sealed tender was reverted to.

In 1910 a contract was made for a three-years term with a Dacca firm of chank-merchants and as this modification in the manner of disposing of the shells has proved of advantage both to the buyers and to Government, it is probable that, whenever possible, this system will be followed in future.

The form of advertisement used in calling for tenders is given in the appendix.

The Chank-beds.—These fall into two categories (*a*) fine sands admixed with a certain amount of mud and known as *pirals* (பிரல்) * in contradistinction to *pars*, the rocky banks where pearl oysters live, and (*b*) *chanku nilam* or chank places—sands more or less mixed with dead madrepore branches (*challi*) and other par detritus adjacent to the margins of the pars or pearl banks. Up to the present neither survey nor tabulation of these chank-beds has been made—an investigation shortly to be undertaken. The principal are of course known and their positions have been shown tentatively in the sketch plans which accompany my *Report to the Government of Madras on the Indian Pearl Fisheries in the Gulf of Mannar*, (Government Press, Madras, 1905) but no detailed work has been attempted, and the boundaries given are certain to be largely amended when we have more exact knowledge. We have yet to learn the relative fishing value of the different beds and are ignorant how far these are stable or variable from year to year.

The principal food of the chank consists of various tubicolous polychæt worms, chiefly small Terebellids, Eunicids and the like. A piral indeed connotes the presence of vast multitudes of these worms; it may be defined as a stretch of fine sand probably with a definite admixture of mud, supporting a profuse polychæt fauna living in arenaceous tubes, on which the chanks prey. This constitutes a characteristic chank-polychæt formation widely spread between the 8 and 10 fathom lines off the Tinnevelly coast. It is noteworthy that in and around the pearl banks on the opposite Ceylon coast few chank-beds are found and chanks are not numerous except in a few restricted areas. In this connection we have to note that the Ceylon sands on the Pearl Fishery coast between the 5 and 10 fathom lines consist of coarser sand grains than those of the Tinnevelly shallow water plateau and, unlike the latter, are generally very clean and almost free from admixture with mud.

The principal pirāl ground lying off Tuticorin is sub-divided into a number of separate pirāls actually

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* This name appears to be very ancient in origin; its derivation is unknown and the word does not appear in any Tamil dictionary I have consulted.

continuous but given distinctive names according to their position relative to one another and to the depth of water over them. These divisions are—

(1) Karai Pirāl, the inshore section lying in $8\frac{1}{2}$ to 9 fathoms to the eastward of the inshore or karai group of pearl banks comprised in the Nagara, Utti, Uduruvi, and Kilathi and Attuvai Arupagam pars.

(2) The great Vattaikal Pirāl co-terminous along its west side with the Karai Pirāl but lying in 9 to $9\frac{1}{4}$ fathoms. This again is sub-divided into northern, middle and southern sections (Vādai Pirāl, Nadu Pirāl and Cholava Pirāl). The southern end comes as far to the south as the Pulipundu Par.

(3) Velangu Pirāl, the eastern section of this great sand stretch. It is bounded on the east by a chain of pars called Ennu Par stretching from the Athompathu Par in the north to Saithompathu Par in the south.

Usually the pirāls yield large catches of shells, as the chanks appear to congregate there to feed upon the tube-worms which give the pirāl sands the name of *puchchi manal* (insect or worm sand). But as already mentioned chanks are often to be found in quantity on the gravels and coarse sands margining any large extent of rocky ground. None of these chank grounds have distinctive names and the men specify their fishing ground by such lengthy descriptive phrases as "the chank place a little on the distant side of the Utti Par" (Utti par velangu arugu chanku nilam).

(2) THE RAMNAD FISHERY.

This chank fishery appears never to have been worked by either the Portuguese or the Dutch. From time immemorial it has been the monopoly of the Sethupathi Rajas of Rāmnād, who held it as feudatories, first of the Pandiyan kings, and later of the Naiks of Madura, and the Nawabs of the Carnatic. They also seem to have enjoyed pearl-fishery rights but when they ceased to occupy the status of feudatories and the district was formed into a zamindari, the right to the pearl-fishery passed to the sovereign power as represented by the East India Company as the successors of the Nawab. For some obscure reason the chank fishery was left to the zamindari and constituted one of the eight heads of

revenue on which the permanent assessment or peshkash was fixed when the permanent settlement of the zamindari was made in 1803.

In 1792, the Nawab of the Carnatic ceded Rāmnād along with other territory to the East India Company, the Raja continuing to hold his territory under feudal tenure as before. In 1795, the Company removed the then Raja and recognized his sister as the ruler but administered the country direct through its own officers. For eight years (1795—1803) these conditions continued, and during this period the Company collected the entire revenue of the estate, including the proceeds of the chank fishery. Then in 1803, the feudal tenure was converted into a permanent zamindari settlement and the status of palayagar or feudal chief liable to render military aid to his overlord changed into that of territorial magnate paying a fixed contribution in money to the Government of Madras.

On two occasions, 1803 and 1874, the chank fishery has been attached by Government for arrears of revenue, while in 1899 and 1900 the Madras Government leased the fishery from the Raja and conducted it on the same lines as the Tuticorin fishery. For the former year a rent was paid of Rs. 2,501 and for the second year Rs. 3,501.

The results were disappointing owing to a variety of causes. During the 1899-1900 season (fasli 1309) 28,728 shells only were collected as against an estimate of 1,25,000. During the succeeding year, as the fishery was begun earlier and terms were arranged more satisfactory to the divers, the total fished of all kinds reached 1,52,373. Great difficulty was experienced in disposing of the shells at a satisfactory price and it was not till October 1903 that they were sold. Exactly what they fetched is difficult to ascertain as they were offered in an undivided lot with the shells fished in 1902-1903 at Tuticorin and at Negapatam (Tanjore). The price obtained averaged Rs. 55-15-3 per 1,000 for large, medium and wormed from all three fisheries, and if we take the sale price of the Rāmnād shells at this rate the gross proceeds would amount to Rs. 10,133-2-8. Deducting the rental paid for the two years, Rs. 6,002, the amount remaining was only Rs. 4,131-2-8, a sum which

fell short of the other expenses of the fishery and left the Government with a loss of over Rs. 1,000 on their speculation, due partly to the price received being unduly low, and partly to mistakes made and to difficulties experienced in organizing the first year's fishery, which proved an utter failure in consequence. If the second year be judged on its merits, the results may be considered as quite satisfactory and it is greatly to be regretted that Government did not give the experiment the benefit of a longer trial, not with the specific object of making money out of it but to ensure the organization of the fishery on lines satisfactory to the fishermen and conducive to the increased prosperity of the chank-beds. At present no attention is given by the lessees to this latter object, their aim being to squeeze the uttermost pie out of the fishery irrespective of the future well-being of the beds. A very great number of immature shells are in consequence brought ashore, instead of being returned alive to the sea.

Fishing localities.—Unlike the Tinnevelly fishery where all the shells may be classed as of one and the same quality, those from the Rāmnād coasts vary considerably, and fall into three classes according as they are fished (*a*) off the mainland north and south of Kilakarai, (*b*) between the north of Rāmēswaram Island and Kachchetivu islet midway to the Jaffna islands in Ceylon, and (*c*) off the mainland of Rāmnād to the north of Mandapam (Pamban).

The first named are very scarce but fetch a high price on account of their exceptionally large size and fine quality. Only 7,000 are said to be fished in an ordinary season. The Rāmēswaram shells are very similar in quality to those from the Tinnevelly coast and except that they contain a larger proportion of small sizes, a parcel of these shells is difficult to distinguish from one from Tuticorin. The market price is only a few rupees less than that of the Tuticorin quality. Of these shells from 40,000 to 60,000 should be fished in a good year. The third locality, the beds off the mainland between Pamban and Tondi, yields shells inferior in size, shape, and colour. The whorls are much telescoped and the colour inclines to a reddish tint at the mouth. These beds are chiefly in shallow water, the beds composed of

dirty muddy sand. The quantity fished is large and amounts to from 1,00,000 to 1,20,000 per annum. They are mostly obtained from beds lying 7 to 8 miles east of the villages of Tiruppalagudi and Mudirampattanam. During the only two years whereof we have statistics, 1,45,206 full-sized shells were fished off the Tiruppalagudi coast and 23,158 off Rāmeswaram; the latter number is, however, believed to be considerably below a normal average, the disparity in the catches from these two places being due to the fact that the Government officers were thwarted by underground influence from getting a sufficiency of the Kilakarai divers, who are necessary for this section of the fishery.

The rates paid to the divers by the lessee are usually higher than those ruling at Tuticorin as the divers incur extra expenses having to work away from home. The great majority are Muhammadans (Labbais) from Kilakarai. Twelve years ago the rate for chanks fished to the north of Rāmeswaram Island and as far as the island of Kachchetivu was Rs. 30 per 1,000, Rs. 27 per 1,000 for those from the beds between Pamban and Tondi, the port of the Sivaganga zamindari, and Rs. 50 for those taken off the Kilakarai coast. At the present time rather higher rates rule, Rs. 40 being reputed to be paid to imported Labbai divers fishing in Palk Bay and Rs. 25 to 30 to the local divers who may either be Roman Catholics or Hindus of the Karaiyar caste. The employers by means of the advance system keep the men eternally in their debt and power. A certain contribution or tithe of their catch is generally set on one side by the divers for the benefit of one of their mosques.

In 1904, the question of the jurisdiction of the Raja of Ramnad over certain chank beds lying from 5 to 7 miles from shore in the vicinity of Mudirampattanam was brought before the High Court of Judicature at Madras in the case of Annakumaru Pillai *versus* Muthupayal and others The defendants or their agents had removed chanks from the chank bed at the place named and were charged at the instance of the Raja with theft of property (chanks) belonging to him. The defendants relied chiefly on the fact that the place whence the shells were taken lay beyond three miles from shore; they argued that the place was in the open sea beyond territorial

limits and hence that no jurisdiction could affect any action at that place.

In the judgment of the court as reported in the *Madras Law Journal* (Vol. XIV, No. 7 Madras, July 1904), it was declared that—

(*a*) Palk's Bay, where the bed is situated being a land-locked arm of the sea, surrounded on all sides by territory under the rule of the King-Emperor, cannot be regarded as the high sea ; within this Bay, no part of the water area can, therefore, be outside the territorial jurisdiction of the Government of India whose predecessors have granted a limited right, that of fishing chanks therein within certain limits, to the Raja of Rāmnād or his assignees.

(*b*) Chanks are not fish. They are not *ferae naturae*, but are *domitae naturae* and are to be placed in the same category as oysters and so may become the subject of theft.

(*c*) Further, the effective exercise of the right to fish and lease these chank beds had been exercised by the Raja of Rāmnād and his predecessors both while they were feudatory chiefs prior to 1803 and since then as zamindars under a permanent settlement which included the chank fishery revenue as one of the heads of revenue upon which the peshkash was calculated. This effective occupation, reinforced by explicit Government sanction, would of itself confer a prescriptive right to the fishery.

The judgment further stated that, as the Gulf of Mannar is also similarly situated to Palk Bay, chanks in the chank beds of that gulf may also be the subject of theft. The court held indeed that if the beds from which the chanks were taken had been off that part of the coast of Rāmnād situated in the Gulf of Mannar their decision would have been the same, since the evidence of effective occupation of the chank beds in both localities (*i.e.*, in Palk Bay and the Gulf) is similar.

At the present time the Rāmnād fishery is leased for Rs. 4,060, which represents rather more than the average of the past 30 years (Rs. 3,047-7-6) as shown by the table of annual revenue included in the appendix.

The Sivaganga chank fishery is of little importance, its lease seldom realizing more than Rs. 100 or Rs. 200 per annum. A tabulation of the annual revenue

derived from it during the past 25 years appears in the appendix.

Originally it was a portion of the Rāmnād fishery, its present separation dating back to the first quarter of the eighteenth century (about 1730 A.D., *vide* Nelson's Madura Manual, Part III, page 249) when the original Rāmnād territory was parcelled out between two rival claimants to the Rāmnād gadi, one of whom received the north-western section which became known as Sivaganga, the other retaining the district whereof Rāmnād is the geographical centre. Sivaganga was and is an inland district, without coastline, but that it might have access to the sea, the port of Tondi and a short adjoining strip of coast were made over by Rāmnād and this proved to be a matter of some inconvenience to the Madras Government in the last Poligar war as the Sivaganga rebels sent out from Tondi several small privateers—armed coasters—to prey upon the local shipping.*

(3) THE CARNATIC COAST FISHERIES.

(*a*) Tanjore District.

The fishery off the eastern coast of Tanjore is another very ancient royalty of the sovereign power holding Tanjore. Prior to the annexation of Tanjore in 1800 this fishery had formed one of the heads of revenue enjoyed by the Rajas of Tanjore, being farmed out in the same way as the Tinnevelly and Rāmnād fisheries.

When the district was ceded to the British, the right to the fishery continued to be sold to the highest bidder; for many years the lease was given in single terms; from fasli 1233 (A.D. 1823-1824) the custom grew up of leasing it for terms of several years, varying from two to five.

During 26 years following the British acquisition of the district, the fishery continued in a flourishing condition, seldom realizing less than Rs. 3,000 per annum and frequently exceeding Rs. 5,000. In one year, fasli 1216 (A.D. 1806-1807) this revenue rose to Rs. 10,198. The average for these 26 prosperous years was Rs. 4,901-10-6 (see appendix No. 6 for details). From fasli 1252 the returns gradually declined till, in 1883, the Collector had difficulty

* Since the above was written the Madras Government have acquired the lease of the Ramnad fishery and it will in future be worked departmentally.

in obtaining a bid of Rs. 115 per annum for a five years' lease

Some slight improvement took place when Government abandoned the system of leasing out the fishery and conducted it departmentally through the agency of the Custom Houses on the Tanjore coast, but even these improved figures are quite paltry, seldom exceeding Rs. 700 per annum. Under the present system, the fishermen bring the shells from time to time as they collect them to the custom houses at the ports of Negapatam, Tranquebar, and Tirumalavasal where they are given payment at the rate of Rs. 20 per 1,000 for all above $2\frac{3}{8}$ inch diameter. In 1910–11 the number thus collected totalled 13,381 while in 1911-12 they reached 12,149.

All these shells are obtained fortuitously in the course of net fishing by catamaran fishermen. The bulk of the shells are taken in the vellai valai, a kind of light trawl operated by two catamarans. Neither beam nor otter board is used with this net, the mouth being kept distended by the two catamarans which maintain a definite distance apart as they sail a parallel course.

The Government records do not furnish any light on the reason for the remarkable depreciation in the value of this chank fishery, and the days of prosperity are so long vanished, that up to the present I have obtained no direct enlightenment from enquiries made in the fishing villages visited. I incline to think that in former days divers were employed in this fishery in a systematic manner; the opening up of other and more lucrative callings, especially the great increase in recent years in the demand for boatmen to carry on the lighterage work of Negapatam and other ports has, I believe, brought about the extinction of the divers' trade on this coast, just as the same factor is tending rapidly to the same result at Tuticorin, where the scarcity of available divers has been a source of anxiety and trouble for several years past. The only hope for any considerable improvement lies in the adaptation of mechanical means such as dredging, to the raising of the shells.

(b) South Arcot Fishery.

As in Tanjore, the fishermen living along the South Arcot coast catch considerable numbers of chanks when using the thuri-valai, or catamaran-trawl. In times long

gone by this fishery probably was counted in with the Tanjore fishery or worked separately according as the northern boundary of the Tanjore kingdom waxed or waned. With the declension of the Tanjore fishery proper, the more northern section was neglected and it was left to the Madras Fisheries Department in 1910 to begin the process of revival. Pending means to inspect and assess accurately the actual potentiality of the chank beds lying off the coast of this district, it was considered advisable to lease the fishery. Accordingly tenders were called for and although the highest bid amounted to the trivial amount of Rs. 235 for the period from 1st January 1911 to 31st March 1912, it was decided to accept this tender, as a tentative measure. On the expiry of the lease fresh tenders were called for and a healthy competition for the lease resulted in its renewal for three years at a substantial advance, Rs. 516–10–8 per annum being given for the privilege of working this royalty.

The system adopted by the renter is to appoint agents in the various fishing villages, who buy the shells from the fishermen at such rates as they can arrange, varying, I believe, according to the size, and forward them from time to time to the lessee's head-quarters at Cuddalore. The proximity of the French territory of Pondicherry is conducive to smuggling and it is alleged that quantities of shells fished in British waters are clandestinely taken to Pondicherry, where probably slightly higher prices for chanks may rule than in the British coastal villages.

The quality of the shells fished on this coast is the same as that of those from Tanjore.

(4) THE TRAVANCORE FISHERY.

This fishery is carried on in the same way as that of Ceylon, an export duty being the means taken by Government to collect the revenue due on this industry. Any one may engage in it without payment of any special dues other than this export tax. The fishery appears to be a petty one producing not more than 100 bags of shells per annum. The fishing season runs from December till April. A few particulars gleaned when in Bengal are given elsewhere (p. 89). The shells as fished are purchased from the divers by petty

traders in the coast villages who resell to merchants who export them to Calcutta from time to time.

The fishermen are mostly Parawas living in the villages between Velinjam, near Trivandrum, in the north and Kolachel in the south—the beds being situated off this part of the coast. From what I can glean from divers who have been to this fishery, it is capable of considerable development although the merchants say the shells are soft under the saw and inferior both in colour and in hardness to Tuticorin shells.

This fishery was used by the Tuticorin chank fishers in 1900 as a lever whereby to extort better terms; in this year they struck work at Tuticorin and proceeded to Travancore to fish on their own account. The manœuvre was successful, and the rate being raised, they returned to Tuticorin and resumed work.

(5) KATHIAWAR FISHERY.

The shells fished off this coast are of good quality, well esteemed in the Bengal trade where they are known as Surti shells—an echo of the day when Surat was the great emporium of the Kathiawar and Konkhan coasts. To-day the shells are sent to Bombay, whence they are shipped to Calcutta. The quantity yielded is approximately 200 bags per annum.

Okhamandal, the north-western extremity of Kathiawar, which forms an outlying portion of the Gaekwar of Baroda's dominions, furnishes a considerable proportion of this export. The right to collect the shells is leased out at intervals for a term of years, the proceeds for the five years ending 1906 amounting to an average of Rs. 151 per annum. Unlike other Indian chank fisheries the shells on this coast are all collected at spring tides when great areas of the littoral are uncovered at the time of low water. A certain proportion of the shells are sold to pilgrims who resort to the holy shrines at Bēt and Dwarka, the district of Okhamandal from its association with Krishna forming one of the chief holy lands of the Hindus, who delight to take home as a sacred souvenir, one of the shells loved of this god. Full details of this fishery and of the enactments made to safeguard it, are to be found in Part I of my "Report to the Government of Baroda on the Marine Zoology of Okhamandal in Kathiawar," London 1909.

(6) THE CEYLON FISHERY.

To omit any account of the Ceylon chank fishery would be to leave the part of the Prince of Denmark out of *Hamlet*. It has the largest production at the present day and in former days was the object of much solicitude on the part of the Dutch and British rulers of Ceylon. To-day it still remains a source of revenue, but its value to Government has dwindled to small proportions and is represented by the produce of an export tax, bringing in some Rs. 5,000 to 6,000 per annum.

Up to 1890, the Ordinances Nos. 4 and 5 of 1842* regulated both the fishery for live chanks and the digging of dead (sub-fossil) chanks. Under these laws the divers were under obligation to take out licences for themselves and their boats, paying specified fees, while permits had to be obtained for the erection of stores for "dead" shells. In consequence of the various abuses which crept in, it was deemed advisable to repeal these regulations and a new Ordinance, No. 18 of 1890, was issued. Under this, all restrictions alike on diving and digging were removed and in lieu of the fees relinquished an export duty not to exceed one cent (2 pies) per shell was substituted. Export of chanks except through specified ports was prohibited. The use of dredges or related apparatus in the fishery was forbidden under pain of imprisonment or of fine while it was declared unlawful and punishable by six months' imprisonment for any person to fish for or collect chanks, bêche-de-mer, coral or shells anywhere "eastward of a straight line drawn from a point six miles westward of Talaimannar to a point six miles westward from the shore two miles south of Talaivilla." The limits specified are so chosen as to include the whole of the long shallow bay wherein all the important pearl banks are situated. Thus the territorial waters of this part of the coast of Ceylon were constituted for the special object in view, as a strip six miles in width outside of a line connecting the two horns of the Pearl Fishery Bay. Owing to the curvature of the shore the seaward limit in certain places is twenty miles from nearest land. This safeguard against interference

* It is interesting to note that the former was entitled "An Ordinance for the protection of Her Majesty's rights in the digging for dead chanks," and the latter "An Ordinance for the protection of Her Majesty's chank fishery."

with the pearl banks was subsequently still more expressly defined by law.

As mentioned above Ceylon chanks fall into two categories, live or "green" chanks and dead or sub-fossil ones. The former are fished by divers in the sea around the northern part of Ceylon, from Dutch Bay on the west, northwards past Mannar and the Jaffna islands round to Mullaittivu on the north-east coast. The depths of water and the method of fishing are very much the same as prevail in the Tuticorin fishery modified in many places by the fact that the beds there lie in shallow water so enabling the divers to dispense with the diving stone and rope. To fish such shallow beds, parties of divers go out in their canoes or ballams to the selected ground. There they leave the canoes and swim about diving from time to time whenever they think they can get a chank. The shells taken they place in a bag suspended from their loins; this goes on until the bag is full or they feel tired, when they return to the canoe, empty their catch into a basket and rest awhile. Much of the diving is done in three to five fathoms. The men are principally Labbais (Muhammadans) from Kilakarai, reinforced in recent years by a number of Arab divers who, after attending certain of the Pearl Fisheries, settled on the coast near Jaffna, married Tamil women and took to fishing chanks and bêche-de-mer while waiting for the next pearl fishery.

The best and largest shells are reputed to be fished on rocky bottom off the island of Nayinativu, very good quality being also characteristic of those fished off Punkudutivu and Mannar Island and on the north-east coast towards Mullaitivu and Trincomali where the bottom is mingled sand and rock; the poorest quality comes from shallow water with grassy bottom, as for example off Kalmunai and Nachchikarai.

The scale of rates paid to divers for shells from these different localities as supplied to me by an Arab diver who has worked over the whole coast, is as follows:—

	RS.
Nayinativu	7 per 100
Punkudutivu	5 per 100
Trincomali and	
Mullaittivu	
North side Mannar island	3 per 100
Kalmunai and Nachchikarai...	2–8–0 per 100

The dead or sub-fossil chank industry is carried on in the Jaffna Lagoon, a vast sheet of very shallow landlocked water some 24 miles long by 6 miles wide. The chief collecting grounds are between Tannankelappu and Kilali along the north shore and around Punaryn on the south side. The shells are found both buried in the mud of the lagoon, and in pits dug along the shore at Tannankelappu. Latterly some deposits have also been found and worked in the shallow strait between the islands of Velanai and Punkudutivu.

These dead chanks are collected by the people of the villages scattered along the lagoon. They wade out into the shallows, sometimes even up to their shoulders, and with the assistance of a long iron rod probe about in the mud till the point strikes against a chank, when they use the second instrument they carry, a hook fastened to the end of a pole, to hook the shell and haul it to the surface. These men become wonderfully expert in the use of the probe and hook; to hook the shell properly and get it out require no mean dexterity.

Stores are situated along the shores of the lagoon where the shells are collected by the merchants who buy up the catches from the villagers.

The catch of dead shells is estimated at from twelve to fourteen lakhs per annum, while that of live shells is about ten or eleven lakhs, varying according to the amount of labour available.

PART II.—THE CHANK BANGLE INDUSTRY—ITS ANTIQUITY AND PRESENT CONDITION.

INTRODUCTORY.

At the present day the general use of bangles made from sections sawn from the shell of the sacred Indian chank or conch (*Turbinella pyrum*, Linn.) is confined to the people of Bengal and of certain of the adjacent provinces. In India proper the custom does not appear to range further west than Behar, nor further south than Orissa. On the north and east the limits are less determinate as there the people are wilder and the means of obtaining articles of ornament difficult and uncertain. We may say however that throughout Thibet from Ladakh in Kashmiri Thibet to the Kham country in the east, the women, whenever their means and opportunities permit, wear heavy and coarsely made bangles manufactured from this shell. In Assam and Bhutan the same custom is observable, but owing to the diversity in origin and to the differences in the manners of the tribes in this region, the custom is sporadic; in one valley all the women may wear these ornaments; in the next valley or in the adjacent hill villages none may be seen.

The women of Bengali race are the main observers of this practice and were the fashion of wearing chank bangles to become obsolete among them, the industry would languish and probably soon die out. It is they alone who provide a steady market for richly carved and highly polished chank bangles; their humble sisters among the Santals, Kochhi, Thibetans, and Maghs are satisfied with plain or rudely carved bangles without polish—they prefer strength and quantity to ornamental designs and fine finish.

The industry of bangle cutting, as will be detailed in the following paper, is located at the present day almost entirely in Bengal. Dacca is the chief centre of the manufacturing trade, Calcutta the emporium where the raw material is gathered from the different chank fisheries in the south of India and in Ceylon and whence the shells are distributed to Dacca and numerous local centres scattered throughout the length and breadth of Bengal.

The following notes are intended to show that in ancient days the custom of wearing these peculiar ornaments was widely spread throughout the greater part of India and that bangle-workshops, equally widely scattered, stretched from Tinnevelly in the extreme south to Kathiawar and Gujarat in the north-west, through a long chain of factories located in the Deccan. The general condition of the industry as it exists at the present day in Bengal will be described together with such notes as I have been able to gather with regard to the various tribes and castes whose women now wear bangles made from the chank shell.

(1) THE ANTIQUITY OF THE INDUSTRY.

(*a*) In the Tinnevelly District.

Reference to ancient Tamil classics furnishes evidence scanty but conclusive of the existence of an important chank-cutting industry in the ancient Pandyan kingdom in the early centuries of the Christian era. Similar evidence is also extant of a widespread use of carved and ornamented chank bangles in former days by the women of the Pandyan country which may be considered as roughly co-extensive with the modern districts of Tinnevelly, Madura, and Rāmnād, forming the eastern section of the extreme south of the Madras Presidency.

Among the more important references which prove the ancient importance of this industry on the Indian shore of the Gulf of Mannar, is one contained in the "*Maduraikkanchi,*" a Tamil poem which incidentally describes the ancient city of Korkai, once the sub-capital of the Pandyan kingdom and the great emporium familiar to Greek and Egyptian sailors and traders and described by the geographers of the 1st and 2nd centuries A.D. under the name of Kolkhoi. From the purity of the Tamil employed in this poem and the similarity of the names of the towns, ports and goods mentioned incidentally with those employed by Ptolemy and the author of the "Periplus of the Erythræan Sea," we may date it as approximately contemporaneous with the writings of these authors and certainly not later than the 2nd or 3rd century A.D.

In one passage (LL. 140–144) the Parawas are described as men who dived for pearl oysters and for

chank shells and knew charms to keep sharks away from that part of the sea where diving was being carried on. Another passage depicts the city of Korkai, then a seaport at the mouth of the Tambraparni, as the chief town in the country of the Parawas and the seat of the pearl fishery, with a population consisting chiefly of pearl-divers and chank-cutters. The great epic, the *Silappathikkarram* or "Lay of the Anklet," written about the same period by a Jain poet gives further information about Korkai from which we gather that on account of the great value of the revenue derived from the pearl fishery, this city was a sub-capital of the Pandyan realm and the usual residence of the heir-apparent, boasting great magnificence and adorned with temples and palaces befitting its wealth and importance.

Another valuable reference to the chank trade is contained in two Tamil stanzas which chronicle a passage at arms between a Brahman and Nakkirar, the celebrated poet-president of the Madura Sangam in the reign of the Pandyan king Nedunj Cheliyan II, who flourished probably about the beginning of the 2nd century A.D.

The Brahman, named Dharmi, presented to the Sangam a poem purporting to be composed with the aid of Siva. Nakkirar, the President, in spite of its alleged divine origin criticised the poem mercilessly, and rejected it as unworthy of literary recognition. The Brahman took revenge by presenting another poem also purporting to be inspired by Siva; in it he held the President up to ridicule on account of his caste trade in the following pungent lines

> "அங்கங் குலையரிவாளி னெய் பூசிப்
> பங்கம்பட விரண்டு கால்பரப்பிச்—சங்கதனை
> கீர்கீ ரெனவறுக்குங் கீரனோ வென்கவியை
> யாராயு முள்ளத்தவன்,"

which may be translated literally as follows :—

> "Is Kiran fit to criticize my poem ? Spreading his knees wide,
> "his joints loosened (by the labour), does he not saw chanks into
> "sections, his ghee-smeared saw murmuring the while kir—kir ?"

Besides the insult intended to be given, the verse contains a play on the President's name and the sound given out during the sawing of chank shells.

The reply of Nakkirar was "Chank-cutting is indeed the calling of my caste; of that I am not ashamed. But of what caste is Sankara? (one of the many names of Siva.) We earn our livelihood by cutting chanks; we do not live by begging as he did,"—an allusion to the fable popularized by the Brahmans wherein Siva is represented as a mendicant seeking alms with a skull in his hand as begging bowl.

(சங்கறுப்ப தெங்கள்குலஞ் சங்கரனார்க் கேதுகுலம்
பங்கமறச் சொன்னால் பழுதாமே—சங்கை
யரிந்துண்டு வாழ்வோ மரனே நின்போல
விரந்துண்டு வாழ்வதில்லை).

Dharmi's description of a chank-cutter's trade is wonderfully vivid in the original Tamil; in a dozen words he paints a realistic word-picture of a cutter's workshop—the men seated on the ground with the knees widely spread and depressed outwards almost to the ground to give free play to the great crescentic two-handled saw monotonously droning a single note as it cuts its way laboriously through the hard substance of the shell.

Tradition has it that Nakkirar, the chank-cutter President of the Sangam, was a Parawa by caste. It would be most appropriate if this be correct as we have already seen that at the beginning of the Christian era chank fishing and chank cutting were among the important trades carried on in Korkai, the chief settlement of the Parawas in early days.

No Parawas to-day are engaged in chank cutting although they still largely monopolize the shore industries of Tinnevelly where they continue as from time immemorial to provide the contingent of divers required for the exploitation of both the pearl and the chank fisheries of the Gulf of Mannar.

It is noteworthy that though their women do not now wear chank bangles their children from four months to about two years old are often given roughly-made chank bracelets to wear in the belief that such will protect them against the baleful influence of the evil eye, from vomiting and from a wasting disease called *chedi* which appears to be rickets and reputed to be caused by the touch or near approach of a woman during her menses! This custom has now been abandoned or is perfunctorily

performed by some of the better class Parawas, but the great majority, including naturally the whole of the poorer and the more ignorant sections of the community, continue to adhere strongly to the custom. The bangles are roughly fashioned and with the crudest of ornamentation; they are made by Muhammadans at Kilakarai, their chief settlement on the coast of the Gulf of Mannar.

The evidence furnished by the Tamil classics of the existence of an extensive chank-bangle industry in the extreme south of India during the height of ancient Tamil civilization 1,200 to 2,000 years ago, has received unexpectedly conclusive corroboration within the present year (1912) through discoveries which I have made on the sites of the once famous Tamil cities of Korkai and Kayal (now Palayakayal). These cities are now represented by mounds of rubbish adjacent to villages still bearing the appellation of their celebrated predecessors. The greatest find was at Korkai, which as already noted flourished from a date well antecedent to the Christian era down to some indeterminate date prior to 1000 A.D. when the accretion of silt at the mouth of the Tambraparni drove the inhabitants to build another city (Kayal) at the new mouth of the river. Here, on the landward outskirts of the village, I unearthed a fine series of chank workshop waste—seventeen fragments in all. The whole number were found lying on the surface of the ground in a place where old Pandyan coins have from time to time been discovered according to information gathered in the village. The fragments unearthed all bear distinct evidence of having been sawn by the same form of instrument, a thin-bladed iron saw, and in the same manner as that employed in Bengal at the present day. Eight fragments represent the obliquely cut "shoulder-piece," six consists of the columella and part of the oral extremity of the shell and the remaining three are fragments of the lips—all show a sawn surface, the positive sign of treatment by skilled artisans.

At Kayal or Palayakayal (*i.e.* old Kayal) as it is now termed, the daughter city of Korkai, which flourished in the days of Marco Polo and appears to have grown rich as Korkai gradually passed away as a sea-port

owing to physical changes in the delta of the Tambraparni, I found an excellently preserved sawn shoulder-piece, with marks of the apex having been hammered in after the present-day habit in Dacca workshops. This was found on the surface in an open space within the present village. Time did not allow me to prosecute a detailed search, but in my own mind the single fragment found is conclusive evidence of the industry having once been located here. No shell cutting of any description is carried on anywhere in this neighbourhood.

Again, at Tuticorin, I have found a sawn and hammered shoulder-piece of typical form, hence as the three discoveries were all made at places which in turn have been the head-quarters of the chank-fishery, I am fully convinced that at all three, chank-bangle workshops formerly existed, to treat on the spot this product of the neighbouring sea. Why the seat of the bangle cutting trade became transferred or limited to Bengal is obscure and may never be satisfactorily elucidated; I am, however, inclined to suggest the hypothesis that the decay of the industry in Tinnevelly may have been consequent upon the Muhammadan invasion. The date of the passing away of the chank-cutting industry I am inclined to put tentatively at about the fourteenth century, a time which marks the close of unchallenged Hindu supremacy in the south, the spoliation of the vast riches of the Pandyan cities by the Moslem and the heyday of Arab sea-power on this part of the Indian coast. With the depression and decay entailed by the loot and ruin of their enormously wealthy temples and long prosperous cities by the invaders under Malik Kafur and his lieutenants it is far from improbable that the particular trade here referred to became disorganized within the Pandyan realm and forced into a different channel, the whole of the shells being exported to Bengal to be cut there instead of being treated locally at the seat of the fishery.

It is also noteworthy that the huge funeral urns found in tumuli of the Tambraparni valley (at Adichanallur) have yielded a few fragments of working sections cut from chank shells, associated in the urns with beautifully formed bronze utensils, iron weapons and implements and gold fillets. So old are these tumuli that they are

classed as prehistoric though it is obvious that the people of those days were skilful artizans in gold, bronze, and iron and must have been contemporaries of historic periods in the story of Egypt and Mesopatamia. Ovari is the name of a small fishing village not far distant on the adjacent coast and may possibly be the Ophir of Solomon and the port whereto the fleets of Tarshish sailed to freight home the treasures of India.

(*b*) The Former Existence of Bangle Factories in the Deccan and in Gujarat and Kathiawar.

I have been unable to obtain any evidence from ancient Indian writings of the existence elsewhere than in the extreme south of the country of any ancient custom of wearing bangles cut from chank shells. Probably such references do exist and, if this be so, I trust the present notes may elicit their quotation by scholars who are familiar with the ancient Sanscrit and Gujarati classics, the most probable sources of information.

Fortunately, in this apparent absence of written records, archæology has important evidence to offer, and although it is difficult to date the greater portion of this testimony with any exactitude, it offers irrefutable proof that the industry of chank cutting and the custom of wearing chank bangles had once much less restricted geographical range than at the present day. The largest collection of remains demonstrating this fact is the Foote collection of Indian Prehistoric and Protohistoric Antiquities in the Madras Government Museum; the excavations made by Mr. A. Rea, Archæologist to the Madras Government, have further extended our knowledge of the range of this ancient industry. The former valuable series comprises several thousands of palæolithic and neolithic implements and weapons together with multitudinous fragments of pottery and other artifacts assigned to the neolithic and succeeding prehistoric periods. For us the main interest centres in the numerous fragments of chank bangles and chank workshop cuttings and waste represented in the collection. Many of these were found associated with undoubted neolithic stone implements while others were mingled with potsherds of less readily determinable age. The

collection includes worked specimens of bangles in a fragmentary condition from the following districts and provinces in India :—

Mysore.	Hyderabad (Raichur Doab)
Bellary.	Kistna.
Anantapur.	Gujarat.
Kurnul.	Kathiawar.

To these has to be added Guntūr District upon the authority of Mr. Rea's researches.

The localities in Mysore, Bellary, Anantapur, Kurnul and Hyderabad adjoin one another and form a solid block or district in the southern Deccan some 250 miles from north to south and 150 miles from east to west. The finds in Kistna and Guntūr Districts are of separate importance as they consist of fragments of bangles associated with Buddhist objects which cannot of course be considered prehistoric.

The localities in Gujarat and Kathiawar form a second well-marked geographical area, being situated around the Gulf of Cambay adjacent to where chanks are fished at the present day.

Omitting Kistna and Guntūr Districts, Mr. Bruce Foote's and Mr. Rea's collections and explorations indicate only these two localities as centres of ancient chank-working in an examined area which extends from Tinnevelly in the south to Rajputana in the north, an area inclusive of the whole of Central and Southern India.

In order to be in a position to decide the age of these chank fragments it will be most satisfactory if I tabulate in the following pages the various sets and give such details as Mr. Bruce Foote supplies in his descriptive catalogue of the collection, with such commentary on each as may be pertinent to the subject at issue.

Mysore.

Srinivasapur in Kolar Taluq, No. 202.* Six fragments of chank bangles associated with iron slag, No. 202 (158), the half of a weathered basalt celt and large

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* The numbers noted are those given in Mr. Bruce Foote's "Catalogue Raisonne," Madras Government Museum.

quantities of fragments of pottery. The particular place where the above were found was to the east of the big tank at Srinivaspur, "where several acres of ground are covered with much comminuted earthenware lying in a thin layer, ... With the pottery I found half a celt of basalt minus its butt but weathered and trimmed at its cutting edge. Half a dozen pieces of broken bangles of chank shell occurred scattered about in the layer of potsherds. Noteworthy among the broken sherds are the vase bases Nos. 202/83–91 of highly polished brown, or red and brown colours." A flat sherd, No. 202/99, is described as "black half polished with an impressed pattern like many small tents; a similar fragment was found by Mr. R. Sewell at Gudivada in the Kistna district." The age of these potsherds, etc., is stated by Bruce Foote both on page 11 and on page 23, volume 2, as apparently neolithic. In my opinion, however, the presence of chank-bangle fragments found among the pottery indicates the age to be considerably later than neolithic days and pertaining to a time when iron was freely employed, as I cannot admit that chank shells can be sawn and bangles made therefrom without the use of a metal saw; the association of a fragment of iron slag is significant. Apart from this, the presence of No. 202/99, described as decorated with a similar pattern to that upon some fragments of a fine vessel found at Gudivada in the Kistna district is evidence in favour of the comparatively late date of these Kolar specimens as the Kistna ones belong certainly to historic times as they comprise lead coins and a terracotta head of a figurine, very classic in appearance, apparently belonging to early Buddhist times. With the Kistna specimens fragments of chank bangles are also associated.

Bellary.

(*a*) Manakurti Hill, 1353. "Columella of a chank shell, upper end ground." Found at same place were a small flake scraper of chert and a small quartz flake. (*Note.*—Similar fragments of chank columellas are said to be used by some tribes in Bhutan as ear and neck ornaments).

(*b*) Nagaldinni, Adoni Taluk, 1442/77-79. Three fragments of chank bangles came from made ground, east of

Nagaldinni, Adoni Taluk, 40 miles north-east of Bellary, associated with a large number of neolithic flakes and cores of chert and agate.

(*c*) Nagaldinni, Adoni Taluk, 1455/16-57. A large number (42) of chank bangles were also turned up by the plough in fields at an old site near the Tower Rock, Petē, 3 miles west of Nagaldinni, associated with shell beads (Cowry, *Natica* and ? *Nerita*) and pottery which Bruce Foote says is "probably of iron age." (All these bangle fragments lack ornamentation; they are of the simplest and most primitive form and bespeak either lack of skill on the part of the workers or primitive taste on that of the wearers. Low-caste Hindu women in Bengal at the present day wear somewhat similar bangles in the form of armlets consisting of numerous rings).

(*d*) Mugati, Adoni Taluk, 1457/38 & 39. Two fragments of chank bangles were associated with numerous flakes, cores, strikers, etc., of chert and agate obtained from a site on a low hill, west of Mugati, Adoni Taluk.

(*e*) Sandurvallam, 1516—B, C and D. At a site, west of Sandurvallam, 15½ miles north-east of Bellary, 2 fragments of worked chank bangles (Pl. IV, fig. 1516) and a working fragment of chank shell were found. The only objects associated with these were a portion of the lid of an earthenware vessel and a piece of reddle or earthy haematite ground upon one side. (The discovery of a single working fragment is insufficient evidence that this was once the site of a bangle factory; in Bengal to-day the working sections cut in the Dacca workshops are largely distributed to other towns to be carved and polished).

(*f*) Hampasagra, on the Tungabhadra, 1518/5-23. The discovery of 18 fragments of chank bangles and a shoulder portion of shell sawn off as in the cutting up of shells for bangles, from made ground on the right bank of the Tungabhadra, east of Hampasagra, 53 miles west of Bellary, furnishes evidence of the extensive use of chank bangles in ancient days in this neighbourhood. With them were beads made of entire *Paludina* shells and fragments of *Cypraea moneta* and of a *Nerita*. The fragments show considerable skill in engraving patterns

upon the outer surface—Mr. Bruce Foote places the age as late neolithic or early iron age (p. 75, Vol. II). It is quite probable that this was the site of a bangle factory for while the presence of a working section is not sufficient evidence, that of a waste fragment such as is cut off the shell when sawing it into working sections is almost conclusive because there is no object in transporting waste to a distance from the factory. Usually such wastage is burned to make lime, shell lime being highly valued in India for whitewashing and fine stucco work.

(*g*) Hadagalli, 1518/a, b and c. From made ground in the north bank of a nullah, at Huvina, near Hadagalli, 65 miles west of Bellary, came a single bangle fragment with two money cowries (*Cypraea moneta*).

(*h*) Raidrug, 1552/1. A fragment of a bangle found on a village site south-east of the Tope, Raidrug.

(*i*) Malyam, 1565/156-158. The mounds south of Malyam, Raidrug Taluk, yielded three fragments of chank bangles. From the same mounds came three fragments of scrapers made of Unio shell, together with a flake of specular iron, and an oval disc of earthy haematite having two faces and a side ground. Also much pottery which Mr. Foote says is "*probably neolithic*," and a small neolithic celt and diorite corncrusher; however, on p. 24, Vol. I, he refers to the Malyam pottery as of "typical iron age." Half of a hone (1557) of slatey limestone, deeply worn by use, is a notable find at this site. With the bangle fragments, etc., was a marginal scute of the carapace of a species of turtle.

(*k*) Bellaguppa, 1574/4-11. From an old site north of Bellaguppa, came a fragment of a working section of chank shell, an entire *Cypraea moneta*, four fragments of scraper made of *Unio* shell,* and three fragments of chank bangles; associated with these were a neolithic celt, a fragment of a corncrusher, some pottery and two metal fragments, one being possibly part of a bronze ring.

Anantapur.

(*a*) Havaligi Hill, Gooty Taluk, 2088/2-9. Eight fragments of chank bangles without incised ornamentation

* Similar scrapers made from the same kind of shell are in use in Ganjam at the present day. They are employed largely for the purpose of peeling mangoes.

were found on an old site on Havaligi Hill, an isolated granite hill in Gooty Taluk, 40 miles north-west of Anantapur.

These were associated with a granite mealing stone and several celts, hammers, flakers and corncrushers chiefly of basalt and diorite and all of neolithic facies, together with a large number of chert and agate flake artifacts, many of which were serrated and biserrated. Mr. Bruce Foote (*loc. cit.* Vol. I, p. 81) says "Exactly for what purpose they" (these highly worked flakes) "were made is problematic *unless indeed they were used for working the patterns on chank shell bangles.* Some are really delicate objects the preparation of which must have required much time and great care." Numerous cores of both chert and agate were found here.—(*Note.* In connection with the above suggestion as to the probable use of the flakes, it must be noted that from the same site came 2085, a fragment of iron slag, which indicates a knowledge of iron, a much more suitable material for chank working tools than chert or agate flakes, however carefully worked. Besides, the remains give no indication of this site having been the scene of a bangle-factory, as all the fragments are worked and just the fragments which we see when bangles being broken accidentally or purposely, are thrown aside by the wearers).

Bruce Foote says (*loc. cit.*) "There are many signs of continued habitation on the middle and eastern parts of the hill, especially the latter, in the shape of mealing places, mostly small and deepish ovals: the shallower hollows are of much larger size superficially."

(*b*) Tadpatri Railway Station, 2106-*a*. The only other find of chank bangle remains was one of a plain unornamented bangle washed out of made ground north of Tadpatri Railway Station; at the same place were found cores of red jasper and of chert and a fragment of a steatite vessel showing signs of having been turned on a lathe. All these remains are classed as neolithic by Mr. Bruce Foote.

Cuddapah.

(*a*) Mundlavaripalli on the Papaghni River. No. 2203. A large number (29) of fragments of chank bangles from

left bank of Papaghni River, at Mundlavaripalli, Kadiri Taluk. Three exhibit carved patterns such as may be made by a saw or a file, the others are without incised carving.

With them were associated a large and remarkable series of fragments of old pottery to which Mr. Bruce Foote assigns a neolithic origin (*loc. cit.* Vol. I. p. 23). No particulars are given as to the depth below the surface at which these remains were found, or whether they were found loose on the surface.

Kurnool District.

(*a*) Bastipad on the Hindri River. No. 2258. A most important find was made by Mr. Bruce Foote in 1888, on the left bank of the Hindri, opposite the village of Bastipad, of large numbers of interesting potsherds, fragments of finished and unfinished chank bangles, and over a score of pieces of chank shells of exactly the same character as those now produced in the cutting up of chanks in Dacca bangle workshops. A piece of iron slag and another of specular iron were also produced from the same site, together with a broken celt and an oblong hone both made of diorite, and some neolithic chert flakes.

These remains appear to have been collected from the surface of ploughed fields as Mr. Bruce Foote says the pottery was mostly much broken up by the ploughing of the fields which had come to occupy the old site in which they had been buried. This site must have been a populous village in olden times to judge from the quantities of potsherds found, and there can be no doubt that one of the industries of this ancient village was that of chank bangle manufacture. The waste pieces and the ring sections cut from the shell are precisely what we meet with in Bengal workshops at the present day. The striations made by the slicing saw are still clearly to be discerned and their regularity and the straightness of the cut are the same as those produced by the big semilunar fine-toothed saw now in use in Dacca factories for this purpose. The presence of the hone and the two pieces of iron have a direct bearing on this matter. The evidence taken altogether disproves completely to my mind, the possibility that the bangle fragments found

here and in other localities by Mr. Bruce Foote were produced by neolithic people using finely serrated chert or agate flakes as suggested by him (*loc. cit.*, p. 81, Vol. I). Had such been the case the shell sections and the waste fragments cut off in the course of sectioning—the shoulder of the shell and the lip section of the mouth whorl—would not exhibit the perfect regularity and evenness of sawn surface which they do. It is quite possible to cut a ring section from a chank shell by means of a flint "saw" but the task is one involving prodigious difficulty and the waste pieces must necessarily be broken and chipped off in the process in consequence of the impossibility of cutting cleanly through the shell owing to the smallness of the tool and the thickness of its back. Only a thin blade such as the employment of iron or steel permits will perform the task of sawing off the shoulder or the lip section in one continuous operation and without breaking off the waste portion piecemeal as the sawing progresses as must necessarily be the case if a small thick-backed stone tool be employed.

The hone found may conceivably have been used for rubbing down the thickness of the edge of the iron saw employed as at Dacca to-day, or in sharpening the edge of the chisel-edged implement used in re-forming the teeth of the saw itself.

Raichur Doab.

South-Western Hyderabad.

The country lying between the Tungabhadra and the Kistna, the Raichur Doab, appears to have been thickly populated in prehistoric times by the same race as has left great numbers of implements scattered through the present districts of Kurnul, Cuddapah and Bellary. Three sites have yielded remains of bangles and of these one has undoubtedly been a manufacturing centre where the raw material has been cut up and worked into bangles for sale to the people of the district. This ancient factory was located near Maski, on the right bank of a tributary of the Tungabhadra. Exhibits 2783-63 to 2783-85 are typical chank workshop waste exactly similar to what I have seen in Dacca factories. There

are examples of obliquely cut "shoulder pieces" with the apex purposely smashed in as seen in pl. VI, fig. 1 which illustrates a modern reject from a Dacca factory, of fragments of the columella and of cut off "beaks." Fifty-three fragments of worked bangles are also shown and a considerable proportion, 2783-25 to 2783-35, exhibit traces of ornamentation in the form usually of cross grooves. Associated with these chank artifacts are numerous neolithic chert flakes, scrapers, and cores, also a fair quantity of old pottery which Mr. Foote regards as of iron age (p. 23. Vol. I), though I am personally inclined to place the age considerably more recent for reasons to be stated later. The find of a broken iron blade, 2783-*a*, at this site is of the utmost importance; it may well be the remnant of a small hand-saw such as is used to-day by Bengal workmen for roughing out much of the line decoration so characteristic of bangle ornamentation.

Fragments of chank bangles have also been found at two other places in Raichur Doab—at Kotegallu, Ling Sugur Taluk and at Rawalkonda. In both cases they were associated with neolithic implements, basalt celts and very numerous chert and agate flakes; a considerable number of the Rawalkonda flakes have biserrate edges. At Kotegallu, the objects had been turned up during ploughing and at Rawalkonda they appear also to have been surface finds; hence in my opinion the significance and value of the association of the bangle fragments with undoubted neolithic artifacts are largely impaired.

It may be remarked in passing that the Kotegallu and Rawalkonda bangle fragments are of the crudest patterns and show no signs of incised carving.

Kistna District.

In Southern India, apart from Tinnevelly district and the southern region of the Deccan, the only finds of chank bangle remains have been at Gudivada in Kistna district and at Amaravati in Guntūr district. The two fragments found at the former place are without decoration, and their approximate age is more easily assignable than that of any specimens from the Deccan; the associated objects are undoubtedly early Buddhistic in their origin, consisting as they do of 4 lead coins, a terracotta

figurine head modelled on classic lines, earthen spindle whorls, and several polished black potsherds, one piece having distinctive decoration similar to a fragment found near Srinivaspur in Mysore, associated with several fragments of chank bangles.

Guntur District.

The great Buddhist remains of Amaravati occur in this district and have been the scene of much careful and well-rewarded labour on the part of Mr. Rea. The chank fragments here discovered are very numerous and important, giving evidence that the chank bangle industry was carried on in this locality even earlier than the construction of the Buddhist buildings. They consist in the main of large numbers of fragments of working sections of the shell together with a very few pieces of finished and ornamented bangles. Besides these are numerous waste pieces—shoulder and oral rejects, showing that the methods of cutting up were identical with those of the present day. The whole of these fragments were found beneath the foundations of buildings which the most competent authorities date circa 200 B.C., hence these bangle fragments are antecedent thereto and must be over 2,100 years old. It may be that these remains constituted part of the town's rubbish heap before the erection of the Buddhist buildings which have survived to the present time and that this rubbish heap was employed in making or raising the ground prior to the putting in of the foundations, or it may be that an old village site, including the waste of a village bangle factory was selected as a site by the Buddhist architects of Amaravati.

Besides bangle fragments, a few rudely carved chank finger rings figure among the remains, together with small discs of $\frac{3}{4}$ inch diameter sometimes perforated in the centre, the latter were used in the fashioning of necklaces. At Peddamudiyam in Cuddapah, Mr. Rea has found complete necklaces formed of spherical chank beads alternating with chank discs of the pattern here referred to. The perfectly circular outline of these small discs is remarkable.

Gujarat and Kathiawar.

Mr. Bruce Foote's labours prove that the custom of using chank bangles was widely spread and that chank-bangle factories were numerous in these two provinces in ancient times.

The finds which he records are as follows :—

In Kathiawar :—

(*a*) Damnagar, Amreli Prant. In the fields (presumably upon the surface) north of the camping tope at this town a great number of chank bangles in a fragmentary condition were found and of these 41 pieces are represented in the Museum collection. Three working fragments were also found at the same place, together with a couple of cowries, and a Trochus shell ground upon three sides. Associated were such neoliths as a basalt corncrusher, a bloodstone hammer and chert and agate cores.

(*b*) Babapur. At this village situated 13 miles westward of Amreli, the alluvium of the left bank of the Shitranji river yielded a large and important series of neolithic chert flakes, scrapers, slingstones, and cores in association with 13 fragments of finished chank bangles, together with two working fragments and part of the columella of a chank. Several of the flint flakes are worked upon one or both edges, and one of the bangle fragments exhibits a chaste design executed with considerable delicacy (pl. IV, fig. 3615-1). The other bangles are of plain and crude design.

(*c*) Ambavalli. Seventy-one fragments of broken bangles from an old site at this place are represented in the Museum collection (Nos. 3622-1 to 65 and 81 to 89). Of these the greater number are ornamented by pattern grooving and many show an elaboration of design as great as those now manufactured in Bengal. The designs in many instances are precisely the same as those in vogue to-day. Seventeen of the finest examples are shown on plate V, borrowed from the Foote catalogue.

Associated with these bangle fragments were numerous portions of sawn sections of chank shells, constituting the rough working material required by the bangle carver ; 33 fragments are shown (Nos. 3622-63 to 65 and 90 to 119).

With the exception of a few unimportant potsherds the only other object of importance found at this site was a small iron knife with tang. No stone implements were discovered, and no information is given as to the precise conditions under which any of the exhibits were found ; presumably they lay on the surface of the ground examined.

(*d*) Sonnaria. Fragments of two chank bangles of simple pattern apparently found on the ground surface. Fig. 3623, pl. IV, shows the simple, semi-cylindrical pattern of one fragment. A chert scraper comes from the same locality.

(*e*) Kodinar. On the surface of Mr. Foote's camping ground were found several sawn portions of chank shell, two being shoulder slices such as are found in the wastage from a bangle workshop.

(*f*) Vālābhipur (the modern Walah). From the ruins of the ancient city Mr. Foote obtained a large and most interesting series of chank bangle fragments, 62 in number, whereof ten of the most noteworthy are reproduced on pl. IV, under number 3493. With them were a smaller number (7) of sawn working sections. A few marine shells (*Nerita*, *Nassa*, *Ostrea*, and *Conus*) were also found among the ruins.

In Gujarat:—

(*a*) Sigam, on north bank of the Heran River. Five weathered sawn working sections of chanks are represented in the collection from this site. No finished remains of bangles were seen. The site yielded a variety of neolithic flakes and cores and two sandstone hammers or pestles. No indication is given of the precise mode of occurrence, but I conclude they were all surface finds.

(*b*) Kamrej, 12 miles north-east of Surat. The summit of a small islet in the Tapti river at this place yielded three sawn shoulder slices (workshop waste) of chank shells and a single fragment of finished bangle. The latter is remarkable for the peculiarity and elegance of its pattern, a broad and closely worked zig-zag groove such as I have never seen either among ancient bangle fragments or on any of the present-day productions of Bengal. It is figured as No. 3066-*b* on pl. IV. With

these chank remains were two fragments of sandstone hammers.

This site is notable as being on an islet in the Tapti river protected against assault by steep and almost inaccessible sides—a place very defensible and therefore an ideal place for the settlement of craftsmen.

(*c*) Mahuri, in Vijapur Taluk. From "an old site at the head of the gully system which cuts deep into the alluvium of the Sabermati" at this place, a series of working sections and waste pieces of chank shell was found sufficiently numerous and varied to convince me, after examination of the fragments, that a bangle workshop undoubtedly existed here at a remote period. The presence of sawn waste associated with sawn working sections is conclusive.

Of completed bangles the remains found were few (8 are shown in the collection) but of these, three are of special interest on account of the elaboration of ornament exhibited. Two of these fragments are of broad bangles richly carved in patterns (fig. 3310-6-7, pl. IV) very closely approximate if indeed not identical with forms in use at the present day. The third fine example is a tiny fragment (fig. 3310-8, pl. V) of the narrow form of bangle known as *churi* in Bengal, usually worn in sets of three on each wrist and figured on pl. XII. The other fragments found are of simpler patterns.

An interesting associated find was that of a small "finial" carved out of shell, probably mother-of-pearl, (pl.V). It is identical in form with a mother-of-pearl nose-pendant now in use among the poorer castes in some country districts in Bengal. An example which I purchased in Eastern Bengal, is carved from the shell of a river mussel (*Unio* sp.). From the alluvium at Mahuri whence the bangle fragments came, a few neolithic implements, chert flakes and scrapers principally, were unearthed, together with several noticeable pieces of pottery. Of the latter, one is of special importance as it affords some evidence better than the neoliths touching the age of the bangle factory once situated at this place. It is a small headless figure of a sacred bull, of polished earthenware, red externally and black within. Two garlands are indicated around the hump by means of

rows of tiny impressed punctures and there can be little doubt that it is of early Brahmanical age.

(*a*) Kheralu. A single fragment of a sawn working section of chank shell was found on the surface of the loess at this place.

Eight sites can clearly be indicated as probable centres of the chank-bangle industry in Gujarat and Kathiawar, namely :—(*a*) Sigam, Hiran Valley, Baroda Prant, (*b*) Kamrej, on the Tapti, (*c*) Mahuri, on the left bank of the Sabarmati, Baroda State, with (*d*) Ambavalli, (*e*) Damnagar, (*f*) Kodinar, and (*g*) in and on the alluvium of the Shitranji river above Babapur, all four in Amreli Prant, Kathiawar, also (*h*) Vālābhipur in Vala State, Kathiawar. At all these places working fragments of chank shells have been found. The most important sites appear to have been those at Mahuri in Gujarat and Ambavalli and Vālābhipur in Kathiawar. The unworked sections and waste pieces of shells found at these three places are so numerous, and so characteristic in their form of stages in shell-bangle manufacture, that we are perforce compelled to admit these sites as having been in old times locations of important factories, a conclusion to which further weight is given by the discovery at each of these places of fragments of completed bangles, in many instances of highly decorated patterns. At Ambavalli and Vālābhipur fragments of finished bangles are especially plentiful and as may be seen by reference to pl. IV. where two bangle fragments from Mahuri (No. 3310), 1 from Babapur (No. 3615), 10 from Vālābhipur (No. 3493), 1 from Kamrej (No. 3066), and to pl. III where 17 fragments from Ambavalli are figured, ornamentation is well executed and exhibits considerable taste, a high degree of skill, and undoubtedly the employment of effective tools of several sorts—saws, drills and files. Iron is the only metal suitable for making tools fit for carving the extremely hard substance of chank shells and it is of the greatest interest and significance that at the Ambavalli site, associated with the many fragments of worked and unworked chank circlets found there, an iron knife with a tang was discovered which from personal examination I am satisfied may well represent such a chank-saw as is to-day in common use in Bengal chank factories for cutting patterns upon the bangles.

From a consideration of the details given above a certain number of facts and conclusions of importance emerge, to wit:—

(*a*) In all cases the fragments of bangles and of chank shells appear to have been surface finds. In several cases this is definitely stated and in the remainder wherever no statement of horizon is given, the context points to a like provenance. From this it follows that association with neolithic artifacts in itself has little value or significance; both neoliths and chank fragments are practically indestructible by atmospheric weathering agencies and their association may merely connote the fact that particular surface areas have suffered little or no denudation or change since neolithic times whereby the broken implements and discarded ornaments of a later age have mingled with those of an earlier one. Or it may be the result of the artifacts of different ages having been weathered out of different alluvial strata in such way that they come eventually to lie together at a lower level of the original ground or else in some newer river deposit into which floods may have rolled them.

(*b*) The facts already noted that all sections of chank shells, working pieces as well as wastage scraps, show cleanly sawn surfaces as verified by examination of the originals now in the Madras Museum, and that these surfaces show series of striae *often at two or more angles to one another*, are sufficient to negative the tentative suggestion made by Mr. Bruce Foote assigning a neolithic origin to the workmanship. Neither serrate nor biserrate chert flake saws however delicately made could possibly produce such cleanly sawn sections as we see represented in the collection. The aid of thin metal saws must be invoked and it is most significant that in two instances (Ambavalli in Kathiawar and Muski in the Raichur Doab) fragments of iron knives were found associated with the remnants of chank working sections. In several other cases (Srinivaspur in Mysore, Havaligi Hill in Anantapur, and Bastipad in Kurnul) pieces of iron slag were found in association.

As the working sections of chank shells retain visible evidence of being sawn by means of a metal (iron) saw and as iron fragments are frequently associated with them, the evidence is to me satisfactory that the age of

the former cannot possibly be neolithic; knowledge of the manufacture of iron into somewhat elaborate tools—saws, files and drills—must have been possessed by the bangle makers. This would appear therefore to rule out the early iron age, when iron weapons and tools were of primitive design.

Incidentally this conclusion is likely to affect the estimate of age accorded to the potsherds so frequently associated with fragments of chank bangles and to render doubtful their identification as neolithic or even of early iron age.

(*c*) Three sites alone give other than negative evidence in regard to age. These are Gudivada in Kistna district, Vālābhipur in Kathiawar and Mahuri in Gujarat. The remains at the first named are indubitably Buddhistic while the occurrence of a figurine of a bull with a double garland round the hump points distinctly to an age when the adherents of Brahmanism were in the land holding in especial reverence Siva's sacred bull. Most important find of all was that made in the ruins of Vālābhipur, for the history of this old city is fairly well known; the dates of many of the great events that happened there are on record and the descriptions of two Chinese Buddhist pilgrims who visited the city are extant. The story of Vālābhipur goes back some centuries before the Christian era and for long it was the seat of the Valabhis, a Rajput race, and the centre of their rule, till the middle of the eighth century when the last of the line was overthrown by Arab invaders from Sind. Valabhi was visited by the Chinese pilgrim Hiuen Tsang in the course of his fifteen years' sojourn in India (A.D. 630–645) and by I. Tsing in the succeeding century. Both pilgrims describe it as a large and flourishing city and a great centre of Buddhist learning, its streets and schools crowded with students. The reigning dynasty, themselves of the Brahman faith, appear to have been tolerant of Buddhism like many of their contemporaries. In Hiuen Tsang's days the latter religion was still followed by great numbers of the populace, especially in Orissa and Southern India; elsewhere Hinduism was rapidly becoming the popular religion and the mass of the people were of this faith when the last Valabhi dynasty ended.

As the chank is a religious symbol both to Hindus and to Buddhists, we may reasonably conclude that the remains of chank bangles found in Vālābhipur were made for the use of the women of the town and neighbourhood not later than the eighth century. The trade must have been long established at that time to judge by the excellence of the work turned out, which fully equals that of average Bengal workmanship of the present day.

Taking all facts into consideration I am inclined to date the majority of the bangle fragments found in the Kathiawar and Gujarat sites as roughly contemporary with the Vālābhipur specimens or at most not antedating them by more than 300 to 400 years.

To date the Deccan chank bangle factories is more difficult ; one outstanding fact is the simplicity of all the patterns. The great majority are devoid of ornament save for a boss roughly carved at one side. This plainness of design would seem to bespeak less skill on the part of the Deccan workman than on that of his fellow craftsman in Gujarat. If that be the explanation, and if it be not due to lack of taste or of the means to pay for good work on the part of the buyers, then we may reasonably date the majority of these fragments back to the first few centuries before or after the beginning of the Christian era. The presence among the pottery mixed with the bangle fragments found near Srinivaspur in Mysore of a flat sherd similar in pattern to one found with the Buddhist remains at Gudivada in Kistna district is noteworthy as lending further countenance to this conclusion.

(*d*) The finds made by Mr. Bruce Foote argue two great centres of chank-bangle manufacture and usage apart from that in the extreme south of the Madras Presidency, namely, one in the Southern Deccan and the other round the shores of the Gulf of Cambay. It is most probable that other centres of the industry did exist, but at present there is no direct evidence to this effect. For instance it is not likely that an industry which was firmly established in Eastern Bengal at the time of the arrival of the Portuguese in India * and of Tavernier's travels in the seventeenth century, and which continues

* Garcia da Orta writing in the sixteenth century states that the chank was then an article of importance in the Bengal trade, *though less valuable than formerly*.

to flourish at the present day, should be of modern growth.

With regard to the third known seat of the industry in ancient times, that which flourished in the early centuries of the Christian era in the Tinnevelly district, its geographical location in the coastal section of the Pandyan kingdom made it the natural centre and home of a great chank-cutting industry. Its Pandyan sovereigns were from time immemorial overlords of the Pearl and Chank Fisheries of the Gulf of Mannar and Palk Bay, the most important source of supply of the raw material then and now, and it is a curious vagary of trade that the present seat of the industry should be situated 1,500 miles from the scene of the fishery.

From the fact that among a few widely separated castes, sub-castes and tribes of the extreme south of India, including among others the Kotas of the Nilgiri Hills and certain sections of the Vellalans and Idaiyans in the inland Coimbatore district, the custom prevails of wearing chank bangles for ceremonial reasons, we may also reasonably infer the former wider prevalence of the custom. Indeed it is probable that the custom was at one time prevalent throughout a large section of Southern India.

Kathiawar and adjacent Gujarat are also both maritime provinces and this geographical situation is the key to the location of the chank-bangle industry in those provinces in early times; the coast of Kathiawar is the only considerable source of chank shells apart from the Gulf of Mannar and Palk Bay. No chank-cutting is now done either in Kathiawar or Gujarat; the women there have abandoned their former habit of wearing chank bangles and all the shells fished in this locality are exported from Bombay to Bengal where they are known in trade as "Sūrti" shells, Surat having been the port of shipment prior to the rise of Bombay.

Why the Southern Deccan should once have been the home of a shell-cutting industry is not so easy of explanation, seeing that it is situated in the heart of the country and distant from 400 to 500 miles from the nearest sources of supply (Rameswaram and the Tanjore coast). Possibly the location of this trade in the Deccan was due to the superior skill as craftsmen of the people in these districts inherited from stone-using ancestors

who found in the quartzite and trap rocks of the district more suitable material for their weapons and tools than the men to the southward where intractable gneiss constitutes all the rocky outcrops. Certainly in prehistoric times, Bellary, Kurnul and Cuddapah were more thickly populated than the country to the south if we may judge from the evidence of the number of stone implements found respectively in these two sections of India. The neolithic remains of these Deccan craftsmen show their makers to have been comparatively highly-skilled workers and with the discovery of the use of iron, hæmatite ore being abundant in Bellary, the men of this district may reasonably be supposed to have developed special skill in the working of the new material into tools and in the manufacture of many articles, ornamental as well as useful, with the aid of these improved tools. Add to this the natural conservatism of tribes isolated from the coast by hill ranges—the customs and manners of the Deccan tribes have been less changed by contact and intermixture with surrounding races than the majority of the tribes or races living in the coastal plains. To these inland people the wonder of the great shell honoured by their gods would appeal vividly; the mystery to them of its origin would confer added importance and, as we find the wild hill tribes of Thibet, Assam and Bhutan do at the present day, they would end by endowing ornaments made from it with mysterious powers of ensuring well-being and good luck, even as the Buddhist cartmen of Ceylon and their Hindu brethren throughout the Southern Carnatic adorn their bulls with a chank shell as an amulet against the evil eye.

Chank shells for the Deccan bangle workshops may probably have come from the Tanjore coast, this being the nearest source of supply. The Tanjore fishery appears to have been fairly lucrative down to 1826 when economic changes caused a collapse of the industry. Tirumalavasal at the mouth of one of the northern branches of the Kaveri is the centre of the chank fishery on this part of the coast and is not far from Kaveri-pattanam, once the chief port of the Chola kingdom and in the height of its prosperity in the early centuries of the Christian era. From Kaveri-pattanam to the inland districts of Kurnul and Bellary the transit of goods would

be comparatively easy and safe; coasters would be used to the mouth of the Kistna, 350 miles to the north, whence river craft would carry the goods direct to their destination, 200 miles inland. Or it may be that the shells required in the industry were fished further south, for we have mention by Cosmas Indicopleustes in the sixth century (circa 545) of a place called Marallo on the continent adjoining Ceylon, where a shell called by him κοχλίους (Kochlious)* was produced in quantity, and Yule in "Cathay and the Way Thither" (London, 1866), Vol. I., p. 81, suggests that this Marallo is the same word as Marawa, the name of the ruling caste in the district of Rāmnād; if this be accepted, the reference would indicate the chank fishery carried on off the coast of the Marawar country and now operated by lessees of the Raja of Rāmnād. Again, a chank fishery, the most productive in the world, exists to-day in the shallow seas in the neighbourhood of Jaffna in Ceylon and direct communication by means of large native craft having existed from time immemorial between the north of Ceylon and the port of Masulipatam, for centuries the eastern sea-gate of the Deccan, this fishery may have been drawn upon also to supply the needs of the latter locality.

The cause of the cessation of the chank industry in the Deccan, Gujarat, and Kathiawar is to be looked for in the constant strife which kept India in a welter of blood through the six centuries of Muhammadan dominance in the land. From the days of Mahmoud of Ghazni, the northern and central portions of India in particular were harried by successive waves of fanatic invaders sweeping down through the north-west passes, and from the thirteenth century onwards to the end of the seventeenth the story of India is that of an unceasing contest between Muhammadan and Hindu for power on the part of the former and for existence and religion on that of the latter. Well may certain old Hindu customs have disappeared; during the worst periods when the intolerance of the conquerors was at its height, their influence was often exerted towards the suppression of Hindu customs and this, combined with the dislocation of trade conse-

* In the Norman-French dialect still spoken in Jersey and the other Channel islands, the common whelk (*Buccinum*), which is the European representative of the Eastern chank, is known as coqueluche!

quent upon the general insecurity of the country and the frequent recurrence of raids and widespread warfare, may be considered the main reason for the decay of the chank-bangle industry in the Deccan and Cambay provinces. A striking confirmation of this conclusion is afforded by Garcia da Orta, a Portuguese writer of the sixteenth century, whose colloquies on Indian drugs and simples have recently been translated by Sir Clements R. Markham (London, 1913). In the thirty-fifth colloquy this old physician remarks :—" There is another (shell) they call chanquo, of which they make boxes, tables, and counters, for though it is rough outside, inside it is very smooth and beautiful. This chank is an article of trade to Bengal, and used to be worth more than it is now. The large ones, which we call Buzios, go to Bengal and are worked up very beautifully, remaining very smooth and white. For this only a small quantity is used, the rest being wanted for bracelets and other ornaments. It was the custom in Bengal that no person of distinction who was a virgin could be corrupted unless she had bracelets of the chank shell on her arms.* After the arrival of the Patans this custom was neglected and the chank became cheaper in consequence. You see here a chess table at your service where you may see the chank when you like."

(2) THE PRESENT CONDITION AND METHODS OF THE INDUSTRY.

(*a*) Preliminary.
(*b*) Present centres of the industry.
(*c*) Volume and importance of the trade.
(*d*) The trade varieties of shells employed.
(*e*) Details of bangle manufacture.
(*f*) The economic position of the trade.
(*g*) The castes and tribes who use chank bangles—
  (1) In Northern India.
  (2) In the Madras Presidency.

* Another translation renders this sentence rather differently, to wit :—" There was formerly a custom in Bengal that no virgin in honour and esteem could be corrupted unless it were by placing chank bracelets on her arms." Da Orta's statement refers really to the fact that an essential ceremony in a Bengali Marriage consists in placing a chank bangle on each of the bride's wrists ; the marriage would not be formally valid if this were to be omitted.

(a) PRELIMINARY.

At the present day, chank cutting, save for some insignificant work done in Kilakarai on the Rāmnād coast near Pāmban, has long been a forgotten art in the south of India, in Kathiawar and in Gujarat. It flourishes solely in Bengal and Assam, with its head-quarters at Dacca. No fishery for chank shells exists off the Bengal coast; the industry depends entirely for an adequate supply of the raw material upon imports obtained by way of the wholesale market at Calcutta.

The best quality of shells used in the trade comes from the fishery carried on departmentally by the Government of Madras off the coast of the Tinnevelly district—a fact which makes an intimate knowledge of the methods and trade customs both of the wholesale merchants and of the cutters who convert the shells into bracelets, a matter of considerable importance to the Government named. In consequence of this I received instructions in 1910 from the Madras Government to proceed to Bengal and there institute an enquiry into the present condition and course of the trade in chank shells.

A tour through the two Bengals in September 1910 was accordingly made; the chief distributing centres were visited, wholesalers and retail-buyers were interviewed, and all the processes and variations of manufacture were investigated at representative workshops in Dacca, Dinajpur, Rangpur and other principal working centres. In the following pages an endeavour will be made to present the salient features of the present condition of the trade—to give an account of the course of business from the time the shells are exported from their various districts of origin till they pass into the hands of the workpeople; an attempt will be made to trace the principal enhancements of price as the trade filters through the hands of the various middlemen and to estimate the final (total) wholesale value of the finished products in order that the great industrial importance of the trade may be adequately realized. The technical and artistic aspects of the industry will also receive due attention, these sections being illustrated by a series of photographs depicting the various stages in the manufacture and ornamentation of a chank bangle.

Prior to the enquiry upon which the present notice is based, our knowledge of the industry was most meagre. Scarcely any definite information had been recorded, save for a few generalizing sentences contained in a short article by Mr. Edgar Thurston in Bulletin No. 1 of the Madras Government Museum, 1894, and paragraph references of the same type and brevity in official and other works dealing with the commercial products of India. My first enquiries on reaching Calcutta were to verify this apparent lack of definite knowledge concerning the course and details of the industry. It was not difficult to do so, for from enquiries made at the Indian Museum (Economic Section) I found that this trade had never before formed the subject of Government enquiry, that the exhibits in the Museum are limited to examples of shells as fished at Tuticorin and elsewhere and to finished specimens of the commoner types of bracelets and armlets in use in North-east India, and that the longest published notice is one of a page in length in Sir George Watt's volume on "Indian Art at Delhi, 1903." This last is not of any importance; it has apparently been compiled from notes made upon an exhibit by a Dacca manufacturer at Delhi. Save for giving an illustration of a Dacca shell-cutter at work, it does not throw any further light on the subject, and on several of the few details mentioned I have found the statements erroneous, *e.g.*, that where it says "as a rule only one bracelet can be cut from each shell."

(*b*) PRESENT CENTRES OF THE TRADE.

Tavernier in his travels through India in the seventeenth century noted the existence of an extensive trade in cutting bracelets and charms from "sea-shells as large as an egg." According to G. V. Ball's translation of this work (London, 1899), Dacca and Patna were then the centres of this industry, Tavernier stating that it gave employment to more than 2,000 persons in these towns. Dacca to-day remains the chief working centre, but the mention of Patna was a mystery to me till I found that another busy and long-established working centre exists near the district town of Pabna. No industry of this nature exists at Patna and I have no hesitation in

concluding that the Patna of Tavernier's "Travels" is an editor's misrendering of the name of the less well-known town of Pabna.

At the present day almost all the shells of the common chank or conch used in the bracelet-making industry are imported into Calcutta in the first instance. A few go occasionally to Chittagong, where bracelet-cutting is carried on by Muhammadan workmen for supply to the neighbouring hill tribes. With this exception Calcutta is the sole emporium for chank shells.

The importers and wholesale merchants in Calcutta are chiefly men closely identified with the Dacca shell-cutters; and are either Dacca born or belong to Dacca families who have settled in Calcutta for trade reasons. Most of these chank importers are related to one another, their families for generations having followed a similar vocation. They are indeed the representatives of lines of hereditary middlemen. The majority have establishments in Dacca for the cutting of shells and the manufacture of bangles, but their chief profits arise from wholesale dealing. A few Muhammadans from the Tamil coast (Labbais) are also concerned in the wholesale trade, having been admitted thereto as their special local knowledge is of much value to their Calcutta partners or principals as the case may-be; these men act as local experts and buying agents at the fishery centres in Ceylon and South India.

Under ordinary conditions the chief Calcutta importers have a business agreement among themselves, a form of co-partnery or syndicate by which the purchases are pooled and divided on a definite agreed basis. By this means they are usually able to maintain a monopoly of the trade and to a large extent to dictate their own terms both to the owners of the various chank fisheries and to the trade buyers in the Bengal manufacturing towns.

All the Bengal chank-cutters orginally were Hindus and their descendants claim that they belonged exclusively to a professional sub-division of the Vaisya caste; at the present time the Dacca workers all claim to be Vaisyas and are known throughout the Presidency either as Sankhari Vaisyas or simply as Sankharis, or, as the word is corrupted in Eastern Bengal, Shakharis. According to

Risley (II, p. 221) they say that up to the time of Adisur they wore the Brahmanical thread, but were degraded by him at the same time as the Subarnabaniks, because the latter had cut to pieces a golden cow which the king had given to certain Brahmans at the celebration of a special sacrifice. The better class men and especially those in the Pabna and Dinajpur districts are now beginning to re-assume the thread as may be seen upon reference to plates IX and X. Sankharis have the Brahmanical gotras and observe the same table of prohibited degrees as the higher castes. In Dacca they are divided into two sub-castes – Bara-Bhagiya or Bikrampur Sankhari and Chota Bhāgiya or Sunargaon Saṅkhāri. The latter are a comparatively small group, who work at carving and polishing bangles, which they purchase ready cut—a departure from traditional usage which may account for their separation from the main body of the caste. In other districts, owing possibly to the smallness of the caste, no similar divisions seem to have been formed.

The workers in Pabna district are also of the same caste together with the descendants of a number of chank-cutting families which have emigrated from Dacca and Pabna from time to time to various other towns scattered throughout the two Bengals. Besides the Vaisya Sankharis who are occupational chank-cutters by caste, a large number of Muhammadans follow the same trade. In several centres, they even outnumber the Hindu workers and at Dinajpur for example, whereas only four families of Vaisya Sānkhāris follow the calling of their ancestors, from 80 to 100 Muhammadans earn their living at this trade.

Dacca, as in Tavernier's day (seventeenth century) when it was the capital of Bengal, continues to be the head-quarters of the chank-cutting trade, and the chief mart for the purchase by dealers and hawkers of the finished article. From Dacca also are exported to other towns in Bengal large quantities of sawn shell sections in the rough to be carved and finished locally. In Dacca the shell-cutters' quarter, the Shakhari Bazaar, is located in the heart of the city ; it consists in the main of a long and narrow street, devoted exclusively to this one trade. Usually the preliminary processes and the

work of shell cutting are carried on in partly open sheds or verandahs at the rear, whereas the carving, lacquering, and finishing of the shell sections proceed in rooms and verandahs open to the street.

The workers belong exclusively to the Sānkhāri sub-caste of Vaisyas ; they appear to be very conservative and have the reputation of being exceedingly clannish. Educationally their condition is or was till quite recently distinctly backward. Their quarter was held in ill odour by their fellow-townsmen as the reputed scene of frequent robbery and undetected crime. Of recent years trade has been very good and with increased prosperity and greater municipal and police supervision the Shakhari Bazaar has shown marked material and moral improvement. When I visited this locality, the street and the houses appeared up to the average of working-class quarters of an Indian city. Personally I met with perfect courtesy and I am glad to be now enabled to express my appreciation of the helpful attitude shown towards myself by everybody with whom I conversed, as well the workpeople themselves as their employers. My enquiries necessitated many questions and much cross-examination upon details of work and of trade and never once did I meet with discourtesy or impatience.

An interesting account by Dr. Wise (Zamindar Wise, whose house is still a landmark in Dacca) of the character and habits of the Dacca Sānkhāris is quoted by Risley (II, p. 221) and is well worth full quotation. Dr. Wise says, " The Sānkhāri have the character of being very penurious and unusually industrious, young and old working to a late hour at night. Boys are taught the trade at a very early age, otherwise their limbs would not brook the awkward posture and confined space in which work is carried on. When sawing, the shell is held by the toes, the semi-circular saw, kept perpendicular, being moved sideways. The caste are notoriously filthy in their domestic arrangements. A narrow passage, hardly two feet wide, leads through the house to an open courtyard, where the sewage of the household collects and is never removed. Epidemic diseases are very prevalent among them, and owing doubtless to their unhealthy mode of life the men as a rule are pale and

flabby and very subject to elephantiasis, hernia and hydrocele."

Dr. Wise describes the women as "remarkable for their beauty, confinement within dark rooms giving them a light wheaten complexion. They are, however, squat, becoming corpulent in adult life, and their features though still handsome, inanimate. They are very shy, but the fact that in former days their good looks exposed them to the insults and outrages of licentious Muhammadan officials is a sufficient excuse for their timidity. Even now-a-days the recollection of past indignities rouses the Sānkhāri to fury, and the greatest abuse that can be cast at him is to call him a son of Abdūl Razzāq or of Rāja Rām Dās. The former was a zamindār of Dacca; the latter, the second son of Rāja Rāj Ballabh, Diwān of Bengal. It is stated that they frequently broke into houses and carried off the Sānkhāri girls, being shielded by their rank and influence from any punishment."

To the above Risley (*loc. cit.*) adds the following information :—

"Sānkhāris marry their daughters as infants by the ceremony in use among the highest castes. It is the fashion for the bridegroom to ride in the marriage procession, while the bride, dressed in red, is carried in a palanquin. Polygamy is permitted subject to the same restrictions as are in force among Brahmans and Kāyasths. Widows are not allowed to marry again, nor is divorce recognized.

Nearly all Sānkhāris belong to the Vaishnava sect, and comparatively few Sāktas are found among them. Their principal festival is held on the last day of Bhādra (August-September), when they give up work for five days and worship Agastya Rishi, who, according to them rid the world of a formidable demon called Sankha Asura, by cutting him up with the semi-circular saw used by shell-cutters. Others say that they revere Agastya, because he was the guru or spiritual guide of their ancestor Dhanāpati Saudāgar. Rice, sweetmeats and fruit are offered to him, and are afterwards partaken of by the Brahmans who serve the caste as priests. These Brahmans act also as priests for the Kāyasths, and are received on equal terms by other members of the sacred order. They also observe the *Jhulaniātrā* and

Janmāshtami festivals in honour of Krishna, kept by all Bengali Vaishnavas. Sānkhāris burn their dead, mourn for thirty days, and perform *srāddh* in the orthodox fashion.

In point of social standing the Sānkhāris rank with the Navasākha, and Brahmans will take water and certain kinds of sweetmeats from their hands. Their own rules regarding diet are the same as those of the highest ranks of Hindus. Many of them indeed are vegetarians, and abstain even from fish. Taken as a whole, the caste have been singularly constant to their hereditary occupation—a fact which is due partly to the smallness of their number, and partly to the steady demand for the articles which they produce. . . . . Of late years, however, a certain proportion of the Sānkhāris have become traders, writers, timber and cloth merchants, and claim on that account to be superior in social rank to those who manufacture shell bracelets."

Dacca became the manufacturing centre of the chank-bangle trade in modern times chiefly owing to its geographical situation at the present-day centre of bangle-wearing. To-day the wearing of chank bangles is virtually confined to Lower Bengal and to the hill tribes to the north and east of Eastern Bengal. The custom ranges from the home of the Santals in the west of Bengal to Assam and Manipur on the east, from the Sunderbands in the south to the Himalayas and the Thibetan plateau on the north. From Dacca the Brahmaputra and its branches enable the peddlers of bangles to penetrate to the trading posts of the wild Naga, Bhutea, and Khasi tribes while the river network of the Ganges delta gives cheap transit to the westward. The importance conferred upon Dacca by the Emperor Jehangir when he made it, in the seventeenth century, the capital of Bengal was a contributing factor, the importance whereof we can judge by the strength of the tendency, apparent at the present time, of the centre of the manufacturing section of the industry to shift to Calcutta in the wake of the import trade now concentrated wholly at the latter port.

As a consequence of the centralizing influence which from reasons of economy tends to create factories at or near the port of import, Calcutta now ranks next to Dacca

as a manufacturing centre ; large numbers of bangles have been produced there of late years. So far, however, its trade is a low-grade one dealing chiefly with the poor quality sub-fossil shells shipped annually in great quantities from Jaffna in the north of Ceylon. These cheap shells are utilized in the production of the commonest grades of bangles. With a few exceptions the patterns followed are crude, the workmanship rough and without regard to finish, deficiencies matched by the bad taste and wretched execution characterizing the lacquered colouration when present.

Nadia is a third centre where chank shells are largely cut up both for conversion locally into bangles and for distribution to bangle-workers in other centres. Other bangle-factories are situated in the districts of Sylhet in Assam, Mymensingh, Chittagong, Pabna, Rungpur, Dinajpur, Murshedabad, Jessore, Kulna, Burdwan, Bankura and Balasore, showing a wide-spread distribution throughout Bengal. Many factory groups are however of small numerical importance, often consisting of no more than three or four families.

My experience generally has been that the chank-worker's hamlets are situated as a rule in outlying villages served by the worst possible of roads. Haragash in the Rangpur district is a typical instance. This large village, a long straggling collection of hamlets covering a considerable area, lies about eleven miles outside of the district town of Rangpur. The special hamlet inhabited by the bangle-workers is known in consequence as Shakhari Para ; out of a total of about 90 workpeople, some 70 are Vaisya Shakharis, the remainder being Muhammadans. There are four principal employers of labour ; of these three have intimate business relations with Dacca houses importing therefrom all the bangle-sections they require ; the fourth employer obtains his requirements from Murshedabad and Nadia where he is said to have factories for the sawing of the shells into working circlets. No sectioning of shells is done in Haragash, where work is confined to rubbing down the rough sawn sections to the required degree and to incising standard patterns with the aid of files and small handsaws. Distribution of the finished products is made

by the intermediary of itinerant vendors who resort to Haragash at periodical intervals, to buy fresh supplies. These bangle peddlers buy parcels worth anything from Rs. 100 up to Rs. 1,000 at a time. Most of them have had business relations with the Haragash firms extending over many years and so, being well known, have no difficulty in obtaining credit till their return, three or even four months later.

The Rajbansi, Kochi and Paliya castes of Hindus, inhabiting Rangpur, Dinajpur, and Jalpaiguri districts and the terai of Darjeeling, are the chief buyers of Haragash bangles, which consist largely of compound armlets of from ten to twelve rings in each set. The best centres of sale are Dhubni, Goalpara, Jalpaiguri and Cooch Behar.

Dinajpur is another typical local centre. In the town itself the quarter where the chank-workers live is known as Shakhari Patti, and this, in view of the small number—four families only—now engaged in the industry, suggests its greater importance in former days. Indeed the men state that their numbers now are much reduced. They claim to be descendants of a colony from Chatmohr, in Pabna district, and are in consequence of the Vaisya caste.

Of recent years Muhammadan workers have entered into competition with the regular caste workers and to-day the bulk of the local trade has passed into their hands. They form a separate settlement at Maljhar village near Rajapara Ferry Ghāt, a short distance from Dinajpur. In all there are about 100 of these Muhammadan work-people engaged in bangle-making as against the four Vaisya Shakhari workshops each employing 5 to 6 men. The piece-work system is in use.

The Dinajpur Shakharis do not produce their own working sections; all they require are obtained in the rough from four wholesale dealers (Hindus) belonging to Nadia who are located at Sahibganj, a small place a few miles east of Dinajpur. The shell sections sold at Sahibganj are said to be sawn at Nadia, from shells brought from Calcutta. The Vaisya employers at Dinajpur usually purchase from Rs. 200 to Rs. 300 worth of sections at a time from the Sahibganj dealers on two to three months

credit. These working sections are tied up in strings of hundreds and packed in baskets at Nadia or Dacca as the case may be whence they are forwarded to their destination in charge of an employee; wherever possible preference is shown for transit by a country boat as the safest method in the case of brittle articles such as bangle sections.

The bulk of the Dinajpur trade consists in the production of bangles to meet the requirements of the lower castes—people who require broad strong serviceable bangles not readily broken in the course of their day's labour. Fully seventy-five per cent. of the production is thus accounted for, considerably less than twenty-five per cent. being medium and high grade work suitable for Hindu ladies of good caste. Further, while the latter only care at most to wear one or two pairs of narrow bangles their poor sisters of humble position are keen to possess and wear as many as they can get upon their fore-arm—a set covering a length of 3 inches and sometimes even more is quite common among the Paliya and Santal women who form the bulk of the clientele of the Dinajpur workshops.

In the other Bengal local centres work proceeds on similar lines, varied only in detail to meet the particular demand or fashion prevailing among the women of the surrounding district. Generally the bulk of the work is in the hands of the Sankhari caste except where Muhammadan competition has become keen, or where the town is outside of Bengal proper. Such an example is Chittagong, where the chank-bangle trade is monopolized by Muhammadan cutters. At this centre large shells only are in demand as they are required for the production of the very broad massive bangles or armlets favoured by the hill tribes served from Chittagong.

(c) Volume and Importance of the Trade.

Commercially important as the trade in chank shells and bangles still is, it appears to have been considerably greater in former times. Thus in Simmonds' "Commercial Products of the Sea" it is stated that "frequently "4,000,000 to 5,000,000 of these shells are shipped in a

"year from the Gulf of Mannar. In some years the value "of the rough shells, as imported into Madras and "Calcutta reaches a value of £10,000 or £15,000." I have been unable to check the accuracy of these figures, the present day production averaging not more than 2,500,000 but from the considerably greater revenue derived by the Indian Government from the chank fisheries off the Tinnevelly and Tanjore coasts during the first half of last century (*vide* Appendix) the estimate probably gives an accurate statement of the value of the fisheries 50 to 100 years ago.

Overfishing in certain localities, decrease in the numbers of the diving community and lessened demand for chank bangles are the chief causes of a decline that dates back beyond the assumption of the royal monopoly of chank fishing by the Madras Government in the early years of the nineteenth century. Garcia da Orta has already been cited (p. 67) for the statement that in the sixteenth century the chank trade with Bengal "formerly produced more profit than now" his explanation of the decline being the lower rates given in his day owing to the custom of wearing chank bangles in Bengal having "more or less ceased since the Pathans (Muhammadans) came in."

In the second half of the seventeenth century Tavernier visited Dacca and records that more than 2,000 persons were engaged in the chank-bangle trade in Dacca and Pabna, "all that is produced by them being exported to the kingdoms of Bhutan, Assam, Siam, and other countries to the north and east of the territories of the Great Mogul" (p. 267, Vol. II, English Translation, London 1889). He further mentions the visits of Bhutan merchants to Dacca whence they took home for sale "bracelets of sea-shells, with numerous round and square pieces of the size of our 15 Sol coins." Elsewhere (*loc. cit.* p. 285) he characterized this trade as "large."

Besides the trade in chank bracelets Tavernier (*loc. cit.* p. 267) states that "all the people of the north, men, women, girls and boys suspend small pieces of the same shell both round and square from their hair and ears." He also refers to a custom which prescribed that when a man dies "all his relatives and friends should come to

the interment and when they place the body in the ground, they take off all the bracelets which are on their arms and legs and bury them with the defunct."

Coming to our own days we find that according to the Bengal Customs returns the following are the declared values of chank shells imported into Calcutta during the past five years :—

TABLE showing the value of Imports of Chank Shells into Calcutta from 1905 to 1910.

—	1905-1906.	1906-1907.	1907-1908.	1908-1909.	1909-1910.
	RS.	RS.	RS.	RS.	RS.
From Ceylon ...	1,44,772	1,89,280	86,515	1,81,223	1,66,060
From Madras—					
Chief port	1,583	14,435	324	2,842	1,648
Other ports ...	32,172	21,622	5,265	52,399	66,371
Travancore	114	...	592	...	500
Bombay	6,744	13,730	3,823	2,305	4,298
Total ...	1,85,385	2,39,067	96,519	2,38,769	2,38,877

Except in respect of the Ceylon imports the weight of the shells unfortunately is not available.

For Ceylon they are as follows :—

	Approximately. Bags.
1905-06—10,941 cwt.	= 6,000
1906-07—15,125 ,, ...	= 8,000
1907-08— 7,259 ,, ...	= 4,000
1908-09—15,962 ,, ...	= 8,500
1909-10—12,480 ,, ...	= 6,500

Approximate annual average—6,600 bags of 250 shells each.

For our purpose it is of importance to know the number of shells from each producing district; after careful consideration of the comparative statistics given above taken in conjunction with information gleaned when in Ceylon and from men in the trade in Calcutta, and with the exact knowledge we have of the Madras production, I am able to state with comparative certainty that the imports into Bengal for all practical purposes

may be estimated to average 22 lakhs per annum divided as to origin thus:—

	Shells.
Ceylon	1,650,000
Tuticorin	250,000
Rameswaram	250,000
Other sources	50,000
Total ...	2,200,000

The actual Ceylon production is larger, amounting in normal years to not less than 20 lakhs, but a considerable proportion is not exported being too small in size or too inferior in quality to be of use for bracelet manufacture. In years when a pearl fishery is held in the Gulf of Mannar, the production of chank shells usually decreases considerably (from 25 to 33 per cent.) while in favourable seasons with no counter attraction of a pearl fishery to divert the attention of the diving population, the annual yield may go well beyond the average given. In 1902 an exceptionally large export took place, as many as 2,410,429 shells being shipped. No pearl fishery occurred in this year and it may be that a portion of the total was fished in the year preceding.

The Tuticorin and Rāmnād shells although together they amount only to 4 to 5 lakhs annually—roughly one-fifth to one-quarter of the total Bengal consumption—have an importance much beyond what we should infer from their numerical ratio. They are the elite of their kind on account of the purity of their colour and of the high vitreous polish they are susceptible of; for these reasons they are necessary for all work of the best quality—all ornamental bracelets must be made from these shells. Jaffna or Ceylon shells on the average serve only for second and other yet inferior qualities of work. Hence while the cutters will give Rs. 160 per 1,000 for Tuticorin and Rāmnād shells, those from Ceylon range between the limits of Rs. 30 and Rs. 100 per 1,000, the bulk inclining to the lower price rather than to the higher.

The first circle in the distributing wholesale trade for many years past has been in the hands of a ring of merchant middlemen who have successfully maintained until now a strict monopoly of the Calcutta import trade. The principal men in this combine hail from Dacca,

maintaining however offices and godowns in Calcutta where some member of each firm usually resides. Calcutta being a far cry from the Gulf of Mannar, the combine as I may term for brevity, this association of exclusive wholesalers, have seen fit for business reasons to admit to their circle a Labbai trader of Kilakarai in order to have the advantage of special local knowledge in conducting their operations in South India and in maintaining intact their monopoly. He is in fact their local expert and managing agent in South India. It is in his name that the combine usually bid when the Tuticorin shells are offered for tender and it is in his name that the combine rent from the Rāmnād zamindari the Chank fishery off the island of Rameswaram and the coast of Rāmnād. In 1910 a Dacca speculator entered into competition with the chank combine for the Tuticorin shells, with the consequence that to defeat his tactics, they increased their bid Rs. 22 per 1,000 beyond that paid for the preceding season's catch (from Rs. 99-9-7 to Rs. 121-9-9 per 1,000).

By having the Rāmnād lease and the whole of the Tuticorin catch the members of the combine obtain complete control of the market for the quality necessary for ornamental bracelets. They also, I believe, in some degree control the Ceylon trade and are thus able to dictate, within certain limits, their own terms of sale. I believe that each member of the ring pays a fixed proportion of the cost of the working of the combine and receives a corresponding share of or in the shells imported. This combination of merchants sort the shells bought, in accordance with the established custom of the trade, into nine grades numbered from 1 to 9 respectively.

The relative sizes of the nine grades are as follows:—

Grade	1.	Shells above 4 inches in diameter.				
"	2.	Shells between	$3\frac{3}{4}$	and	4	inches in diameter.
"	3.	Do.	$3\frac{1}{2}$	and	$3\frac{3}{4}$	do.
"	4.	Do.	$3\frac{1}{4}$	and	$3\frac{1}{2}$	do.
"	5.	Do.	3	and	$3\frac{1}{4}$	do.
"	6.	Do.	$2\frac{3}{4}$	and	3	do.
"	7.	Do.	$2\frac{9}{16}$	and	$2\frac{3}{4}$	do.
"	8.	Do.	$2\frac{3}{8}$	and	$2\frac{9}{16}$	do.
"	9.	Do.	$2\frac{1}{4}$	and	$2\frac{3}{8}$	do.

A variable proportion of grade No. 9 (between $2\frac{3}{8}$ and $2\frac{1}{4}$ inches in diameter) is added to the bags as the cutters object to any large proportion of this grade, on account of the difficulty of utilizing any large number of bracelets of such small diameter. No shells under No. 9 ($2\frac{1}{4}$ inches diameter) are mixed with the assorted sizes; these smallest size shells are kept separate and sold apart from the others.

Shells wormed on the larger whorls are also excluded from the bags, but if the apex only be slightly affected no objection is made to inclusion as this part is of no value, being smashed in prior to slicing up the shell.

The present tendency is towards enhanced prices partly because of competition actual or threatened, and partly because of the increasing prosperity of the chank bangle industry. The former cause is fortuitous and may be transitory, the latter substantial and giving promise of continuance owing to an increased demand for chank bracelets by the better class Hindu ladies of Bengal. The Bengal Swadeshi movement has been the principal factor as the people were asked to discontinue the use of foreign-made glass bangles (almost all made in Austria) and to resume the wearing of chank bracelets according to the custom of their ancestors. A second factor of considerable and increasing force is the marked advance in the artistic quality of the bracelets turned out. Some firms produce beautiful and harmonious designs, infinitely more artistic and pleasing to the eye than any of the gaudy glassware imported from Europe. The higher caste Hindu ladies who a few years ago were rapidly discarding chank bracelets as regular adornments fit only for the use of low caste people, are resuming the habit, a change due undoubtedly to the Swadeshi movement reinforced by an increase of skill and taste on the part of the more enterprising firms.

The first distribution of shells made from Calcutta is effected at an enhancement of price approximately equal to 40 per cent. upon that paid to Government at Tuticorin. Shells bought at 100 per 1,000 are sold at the Calcutta godowns, at not less than Rs. 14 per 100 or Rs. 140 per 1,000. Excluding interest upon capital locked up, this gain of 40 per cent. may be said to be

almost all clear profit, as I reckon that the costs of sorting and bagging and of freight to Calcutta are covered in large part by the profit made on the thousands of undersized shells confiscated from the divers without payment which it has been the custom to give to the buyer at the nominal rate of Rs. 6 per 1,000. It is probable that the best of these were always sorted out and added to the assortment sold at full prices in the wholesale market at Calcutta. We may certainly take the enhancement of price of Tuticorin shells upon the first wholesale change of hands at not less than 40 per cent. ; it is probable that a similar percentage of profit is made by the first ring of middlemen upon the sale of shells from other localities.

The second buyers may be firms actually engaged in shell cutting.; more frequently they are a second series of middlemen. If the latter the shells may either be sold to cutters working in a small way, or the middlemen may slice the shells into sections of recognized gauge breadth and dispose of these either through agents or through a third series of middlemen to the bangle makers in country villages where the men have not the skill to saw the shell into sections although they are experts in carving, graving and polishing the rough circles supplied to them. This second series of middlemen have been buying Tuticorin shells during the past few years at about Rs. 14 per 100; they pay Re. 1 to Re. 1-8-0 per 100 rings for the work of slicing the shell into sections, and the sections so cut are sold to country bracelet makers at rates ranging from Rs. 17 to 22 per 100. An estimation of the profits made must necessarily be based upon the average number of sections suitable for bracelet making into which shells are capable of being cut. The workers themselves have assured me that three broad sections suitable for massive *bala* bracelets is the average they reckon upon per shell and provided the average size of the shells is good. As this is the case with Tuticorin shells there should be no difficulty in maintaining the average named. Shells of $2\frac{1}{4}$ and to $2\frac{3}{4}$ inch gauge cut into two sections only, but the bulk of Tuticorin shells range from $2\frac{3}{4}$ to $3\frac{1}{4}$ and these are three ring shells while the number of 4 and 5 ring shells (above $3\frac{1}{4}$ inch gauge) is sufficient to balance those

giving two only; moreover the large diameter of the 4 and 5 ring shells makes them especially valuable and when a good proportion of these are present the value is greatly enhanced especially if the colour be good as it is in Tuticorin shells. If the sections be required for the narrow chūri form of bracelet as many as ten rings may be sawn from one shell.

Basing our calculation upon an average yield of 3 ring sections per shell and an average sale price of Rs. 18 per 100 sections, the labour of sawing the shells being paid at the rate of Rs. 1-8-0 per 100 rings the profits of a member of the combine who cuts up the shells in his own factory may be estimated approximately at not less than Rs. 174 per 1,000 shells, taking the cost price at Rs. 121-9-9 per 1,000, the rate obtained by Government for the 1909-10 season's catch—a price higher by Rs. 22 than that ruling the previous two years. The following rough balance sheet shows how I arrive at this estimate, viz :—

Cost and expenses per 1,000 shells.

	RS.	A.	P.
Purchase at Tuticorin	121	9	9
Freight and charges	10	0	0
Rail charges and warehouse rent and miscellaneous	9	6	3
Labour—sawing into rings; 3,000 rings at 1-8-0 per 100	45	0	0
Commission to agents 10 per cent. on sales	45	0	0
Bad debts and interest 10 per cent. ...	45	0	0
	276	0	0
Proceeds—			
Sale of 2,500 rings at Rs. 18 per 100 (500 sections being rejected as bad)...	450	0	0
Net profit on 1,000 shells	174	0	0

This is equivalent to a profit of 63 per cent. upon the total expenditure.

In cases where it is the second middleman who saws the shells into rings for sale to the artisans, the average profit is reduced to about 50 per cent. owing to the higher rate he pays for the shells—he has to pay from Rs. 150 to Rs. 170 per 1,000 for his shells; on the other hand, he saves on the items of freight and charges which

figure in the first middleman's account, as he buys ex-store in Calcutta.

Correspondingly when the first middleman sells the shells in the natural condition to a second his profit diminishes to the modest rate of 40 to 45 per cent. in years when he buys from Government at about Rs. 100 per 1,000 as he can always count on selling wholesale in Calcutta at from Rs. 140 to 150 per 1,000. With a higher initial cost as in the case of the season 1909-10, when the combine had to pay Rs. 121-9-9 per 1,000 under more stringent conditions as to payment for the small sizes, it is possible the ring may not be able to advance their wholesale rates for Tuticorin shells sufficiently to obtain their usual 40 or 45 per cent. of clear profit as this would entail a selling rate of not less than Rs. 184 per 1,000, whereas the rate ruling when I left Calcutta was only Rs. 160 per 1,000; there was however talk of an enhancement of price at an early date. In this connection it should be clearly understood that such rates are current only among the big dealers in Calcutta, Dacca, Nadia and other sub-distributing centres who usually have intimate relations with the heads of the ring and may be said to work in conjunction with them. To small dealers and to cutters in outside places increased rates are charged. It seems also to be one of the aims of the ring to prevent workers in outlying centres from cutting shells—it pays them better to discourage this and to supply only cut material from their own factories at greatly increased rates, as they are thus able to double their profit with ease. To retain their grip on such lucrative trade it is no wonder the combine are willing and able to spend money freely with the object of breaking any rival who may dare to challenge their trade oligarchy; out of my personal knowledge I can say they have independently evolved many of the trade intrigues of which the American Trusts are accused; indeed I fancy that the working of a "combine" was understood in India in days before American Finance was born.

Workshops where the labour employed is largely devoted to the production of annular sections of shells—bracelets in the rough—are located at a few only of the larger centres. I know this branch of trade is carried on

extensively at Dacca and I was informed by Dinajpur shell cutters that their particular supplies come from workshops at or near Murshedabad and Nadia. There may be others. From these centres the rings are forwarded through agents to a large number of outlying villages and towns scattered through Bengal and Assam.

Transactions between wholesale dealers as well as the sale of shells and ring-sections are almost always for credit, usually for periods of 2 to 3 months. Losses occur but seldom for the "combine" would at once refuse to deal with defaulters, and workers who cannot or will not pay or who give trouble find the sources of supply of the raw material required in their trade cut off; they must make their peace with the middlemen or quit business—a drastic alternative which ensures the due performance of promise made to sellers.

The trade at the present time enjoys marked prosperity and the individual worker earns high wages according to Indian standards. It is a poor workman who cannot earn one rupee per day; remuneration is by piece work and as the workers are trained to this trade from the earliest age they can rub a shell-circle upon a grindstone, few are not expert workmen by the age of 20. Even boys of 7 and 8 years old are able to earn 4 annas a day at rough filing. Skilled hands earn from Re. 1 to Rs. 1–8–0 per day and those capable of carving elaborate patterns command considerably higher rates. The appearance and conduct of the men generally, give the impression of superior intelligence; I found them quick to catch my meaning when engaged in cross-examining them upon the details of their trade and they showed the utmost courtesy and patience in their efforts to render matters plain to me.

(*d*) The trade varieties of shells employed.

Chanks from different localities have distinguishing characteristics well known to the Calcutta and Dacca dealers; they constitute in fact a considerable number of local races differing little in appearance to the casual eye, but readily distinguishable by these shell experts who are able to say at a glance whence any particular shell has come. As a consequence of these local varieties having differing physical characters, their price varies and

the shells from each locality are kept and sold separate during the first series of wholesale transactions. Among the wholesalers at least eleven varieties and qualities are recognized. They may be summarized as under :—

1. *Tutikkuddi.*—Shells obtained from the Madras Government fishery off the coast of Tinnevelly. These form the finest and most valued quality from which the choicest bracelets are manufactured. They are marked by a well-balanced and elegant form, neither squat (as in the Negapatam or Tanjore type) nor greatly elongate (sub-fusiform) as in shells from the Andamans. The regular and gradual increase in the size of the whorls enables this form of shell to be cut to the greatest advantage, and gives a maximum number of sections. The shell is of a perfect opalescent whiteness and of great hardness and evenness of texture, which render it susceptible of a high polish.

In seasons previous to 1909–10, when the Calcutta buying combine were able to buy these shells practically at their own price, they were disposed of wholesale by these men at from Rs. 35 to Rs. 38 per bag of 250 shells or Rs. 140 to Rs. 152 per 1,000, on credit terms.

2. *Ramessari.*—These are the shells fished off Kilakarai and the island of Rāmēsvaram under license from the Rāmnād zamindari. The quality approaches that of Tuticorin very closely but is esteemed slightly inferior, and fetches about Re. 1 to Rs. 2 less per 100, not so much in respect of the quality of the individual shell as because of the larger number of smaller grade shells present, due to lack of fishery regulations designed to safeguard the immature. Good selections however will at times fetch prices equal to those of Tuticorin shells and by one of the tricks of the trade, these shells appear to be lumped frequently with Tuticorin shells as of equal quality in sales made to the bracelet cutters in outlying villages, as these men appear not to know of the existence of this grade and of the slight difference in quality between it and that of Tuticorin.

3. *Jammaipatti.*—An inferior quality of Rāmnād shell fished off the mainland to the north of Mandapam—thence to Tondi. An inferior shell, small and of poor quality, price about Rs. 50 to Rs. 60 per 1,000.

4–7. *Patti.*—This is the generic name for "live" shells fished off the north and north-western coasts of Ceylon. There are several recognized grades of pātti.

4. *Noyakhad Patti* or standard Pātti is the best grade. The shells so distinguished are of good working size, thick in substance, and of good colour; the best of them approach closely the Rāmēsvaram quality and fetch wholesale from Rs. 70 to Rs. 100 per 1,000 in the Calcutta market. The name is said to be the Bengal equivalent of Neduntivu, otherwise Delft, an island near Jaffna, where the majority are fished. Some shells of the same good quality also come from the waters immediately north of Mannar Island.

Other qualities are—

5. *Small Patti* of same quality as grade 4, but of inferior size and sometimes inferior colour. Worth Rs. 30 to 45 per 1,000 in Calcutta.

6. *Thin Patti.*—Shells of inferior thickness obtained from certain Jaffna waters. Worth about Rs. 25 per 1,000.

7. *Mixed Patti.*—Neither this nor the preceding grade has come actually under my observation. The present quality is said by the dealers to consist of mixed shells of inferior quality and colour imported from Singapore *viâ* Jaffna. The value ranges from Rs. 40 to Rs. 50 per 1,000 in Calcutta.

8. *Dhola.*—Dead, sub-fossil chanks from the shallow muddy lagoons in the neighbourhood of Jaffna, Ceylon. These are found by probing with an iron rod in the soft mud. They are chalky and lustreless and are used for the cheapest and most inferior grades of bracelets. A considerable proportion of the large sizes are found and these sell for Rs. 5 to 6 per 100 in Calcutta; the small sizes from Rs. 3 to 4 per 100.

This quality is the one principally employed in making the compound bracelets or gauntlets of 10 to 12 rings affected by low-caste Hindu women in Northern Bengal—Paliya caste very largely.

9. *Gharbaki.*—A class of squat shells badly adapted for economical cutting coming from the Carnatic coast, from Point Calimere in the south to Madras in the north. To the defect of shape, they add that of colour, these shells being frequently distinguished by a marked redness of the inner surface. They are also said to be more

brittle than Tuticorin shells and not to give the high glaze when polished as do the latter shells. *Karamukhi* is a term sometimes employed for those of this quality which are characteristically tinted a dirty brick-red at the mouth opening. They vary greatly in quality and may fetch anything from Rs. 40 to 80 per 1,000 in Calcutta. Good average quality such as are fished on the Tanjore coast should fetch Rs. 80 per 1,000 wholesale in Calcutta without difficulty. A certain number of inferior shells with an undue proportion of small sizes come from the French territories of Pondicherry and Karikal; it is possible that these in part are fished in British waters and surreptitiously carried to French territory owing to the rule in force in Tanjore and South Arcot to confiscate all undersized shells brought in for sale to Government. The price of these French shells rules usually from Rs. 20 to Rs. 25 per 1,000 less than for shells fished off the British districts owing to the larger proportion of small sizes present.

10. *Duani.*—These shells are fished off the Travancore coast. They are large and of excellent quality. They come packed in cadjan mats, the large separated from the small. The former fetch from Rs. 14 to Rs. 18 per 100 according to size, the smaller Rs. 10 to Rs. 12 per 100. The larger run 100 to a bag—the smaller 200 to 250 per bag. The total quantity imported into Calcutta seldom exceeds 100 bags per annum.

11. *Surti.*—The name is a corruption of Surat as these shells were exported from that port prior to the rise of Bombay. Now the whole export trade is concentrated at the latter port, but the old trade designation survives. The shells are fished off the Kathiawar coasts ; they are often very large and of fine quality. Two sub-grades are recognised of which the larger fetches Rs. 22 to Rs. 25 per 100 while the smaller runs from Rs. 8 to Rs. 10 per 100. The quantity imported is said to be about 80 bags large (100 shells to a bag) and 120 bags of small (300 to a bag). It must be understood that the prices given above are approximate only ; they represent the average value during the past two or three years.

The sawn rings supplied from the wholesale cutting factories at Dacca and some few other centres to local bangle workshops widely scattered throughout Lower

Bengal are distinguished and sold under a different series of trade terms. The range of these terms undergoes considerable reduction at this stage, as it is now only a matter of the quality of the working section or ring and not of size and shape in addition to colour and quality as is the case with regard to the classification of shells.

The grades of shell-sections recognized by bangle workers in outlying districts are usually five in number and are as follows :—

First quality.—*Titkūtti.*—The working sections sold under this title vary in price from Rs. 17 to Rs. 22 per 100 pieces according to size and quality—the average working out at about 3 annas each. As is indicated by the name, these sections should be cut from Tuticorin shells of perfect quality. In actual practice, the highest quality of Rameswaram and a quantity of the best selected Ceylon shells from Neduntivu and Mannar are usually utilized for the production of Titkūtti rings. These are usually bought on credit in Rs. 100 to Rs. 300 lots.

This particular quality is required almost exclusively for the manufacture of highly ornamented bangles of churi and bala descriptions as both these require to be highly polished and for this purpose the Tuticorin grade is the one best adapted on account of its great hardness, fine grain and perfectly white colour.

The second quality termed *Jadki,* also hails from the Tuticorin and Rameswaram fisheries but is slightly inferior to the Titkūtti grade which forms a "selected" grade. The inferiority of the Jādki grade is expressed usually in some slight defect in respect of colour or the presence of a worm hole. The price of working sections made from this quality is from Re. 1 to Rs. 2 per 100 less than similar sized Titkūtti ones.

Patti is the third grade, priced from Rs. 2–8–0 to Rs. 3-8-0 per 100 sections less than those of the Titkūtti grade. They are cut from good quality Jaffna shells. The large compound bangles so freely used by Santal women are made generally from this quality.

The fourth grade, *Dhola,* is cut from dead shells imported from Ceylon. The price for useful sized sections ranges from Rs. 8 to Rs. 12 per 100 or from Rs. 5 to Rs. 6 per 100 less than for *Patti.*

The fifth and most inferior grade is *Alabila*, cut from the smaller sizes of Jaffna dead shells. The wholesale price varies from Rs. 5 to Rs. 10 per 100 sections.

(*e*) DETAILS OF BANGLE MANUFACTURE.

Being an industry widely scattered over a large area, the two Bengals and Assam, it is to be expected that considerable variations in the conduct of manufacture should prevail. In large centres such as Dacca and Calcutta a great part of the work is carried on by capitalists employing workpeople on piecework; elsewhere it is largely a home or family industry carried on by the head of a household with the aid of his sons and relatives.

In Dacca the industry falls into two chief divisions, one engaged upon the preparation of working sections of the shell which may either be wrought into the finished product by other craftsmen in the town or else exported to other places where the trade is limited to the ornamentation of working sections sawn from the shells elsewhere.

The preparation of working sections is carried out usually in shady sheds in the backyards of the employers. In a typical one six sawyers were employed. The shell first passes through a preparatory treatment for the purpose of extracting the columella and thereby reducing the amount of labour necessary in sawing the shell into sections. To admit of this a slice of the lip is first sawn off; it is then comparatively easy to break through and shatter, by way of the mouth opening, the majority of the various septa connecting the columella with the outer wall of the shell. The apex of the shell is next smashed in and the apical septa destroyed, so releasing the columella, already set free in its oral portion. The shell is now open from end to end. The tool employed for breaking away the columella is a hammer fashioned on the principle of the well-known geologist's hammer, sharp-edged on the one side and square on the other.

The shell is now ready for the sawyer, who sits on the earthen floor tightly wedged between two short stakes of unequal length driven into the ground. Against the longer, measuring some 15 inches above the ground, the worker's back is supported, while against the shorter,

only 4 to 5 inches high, his toes are pressed. The space between the two stakes measures no more than 18 inches, hence the workman although he sits with his knees widely separate is very tightly jammed between the rests. This is found essential as it is necessary that his limbs should be rigid during his work, as his feet have to function as a vice during the sawing of the sections, the shell to be cut being placed between the right heel and the toes of the left foot.

After the columella and lip of the shell are removed, a disc of hard wood is placed over the mouth aperture of the shell to provide a firm purchase for the foot pressed against this side of the shell. The worker is now ready to begin sawing the shell into sections. For this purpose he is provided with a heavy hand-saw of great apparent clumsiness. The iron blade, as seen in fig. 2, pl. VI, is of a deep crescentic form ending in an attenuate horn at each end. A little way from each of these tapered extremities the end of a long iron tang is rivetted to the back of the saw; the further ends of the two tangs are connected by a thin cane cross bar or handle lashed by twine to the tangs which are covered with a serving of the same twine. It is noteworthy that the tangs are not straight but have a hook-like bend near the attachment to the blade. The latter is a stout forged iron plate, 2 mm. thick except for a distance of one inch from the cutting edge where it is worked down to a thickness of 0·6 mm. Between the tangs the back of the saw is protected by a piping of iron. A saw of this description costs Rs. 12, each workman providing his own. After sharpening, a new saw is adorned on each side of the blade with a number of red spots as auspicious marks.

In beginning work, the shell is placed somewhat obliquely between the feet, the apex directed to the right and away from the worker, who places his left hand on one twine-covered tang of the saw and the other on the horn of the blade at the opposite extremity. Balancing the saw carefully in his hands, and at right angles to his body, he applies the edge to the shell and begins a vigorous to and fro movement of the saw from side to side, the course of the hands being through a short arc of a circle at each swing. Several times he pauses momentarily to adjust the shell anew as the work

progresses. On an average it takes $4\frac{1}{2}$ minutes to saw once through a shell. The number of working sections given by a single shell is determined according to the shape and size of the shell and the thickness of the sections desired. For the narrow churi bangles as many as ten sections may be obtained from a good sized shell, but for the broad bala bangle three are a good average. If 5 sections are cut from a shell the shell has to be sawn through six times, so we must count five minutes as the minimum time required to cut off a working section. To this must be added the time occupied in re-sharpening the saw, a frequent requirement, owing to the great hardness of the shell. Fortunately the method employed is an expeditious one. It consists merely in going over the whole length of the cutting edge in a series of taps with a light chisel set hammerwise in a wooden handle (Pl. VII, fig. 1). The taps are quite lightly given, the serrations very numerous and very shallow.

In Dacca, a skilled cutter is paid at the rate of Rs. 10 to Rs. 12 per 100 shells sawn up, but for this remuneration he has to prepare the shells for cutting, a slow and tedious operation, and has to provide his own tools. One hundred working sections per day is the limit of production per man working upon shells previously prepared ready for sawing. In practice it is usually considerably less owing to various delays normal as well as unforeseen—the repeated sharpening required by the saw, a badly prepared shell, a cut heel due to a slip of the saw, and often enough, a touch of fever. Shell slicing calls for the possession of a highly trained eye, perfect steadiness of hand and arm, and an ironlike capacity to sit for long periods in a position of great discomfort. Unless in a perfect condition of bodily fitness such work is an impossibility. During apprenticeship few men can endure the strain sufficiently long to accustom their body to the habit of the strained position, the constant and monotonous attention required by the saw and the extreme fatigue of the occupation. As a consequence the sawing of working sections is limited to a few centres and a good cutter is a valuable asset to his employer. To retain a hold upon these men, employers willingly give large advances in cash to them, sometimes amounting, I was told, to as much as Rs. 200

per head ; the usual advance ranges between Rs. 100 to Rs. 200. Whenever an exceptional need arises for the expenditure of a considerable sum—it may be a marriage in the family or the cost of death ceremonies, a further advance from the employer is relied upon to meet the emergency. The excess beyond a certain sum will be gradually liquidated thereafter, leaving a standing advance at the debit of the workman which on both sides is not expected to be repaid unless the employee decides to quit the service of his master, a virtual impossibility in the case of such improvident people as these cutters are, unless he takes service with another employer who is willing to pay up the whole indebtedness and so take over the debt as well as the workman.

Hitherto the Dacca and other shell cutters have employed no machine saws. They believe that no machinery is capable of cutting the shells without damage, basing their belief on the results of an experiment with some form of machine saw tried some years ago. The cutters allege that the impact of the saw upon the shell was to cause innumerable small fractures which rendered bracelets made from the sections thus cut fragile and liable to break much more readily than when the sections are cut by means of the hand-saw. It is probable that the effect named was produced by the machine used, but it does not follow that there are no machine saws on the market capable of cutting shells without ill effect on their substance. Possibly the machine used had a saw carrying teeth too coarse or too large in size. I noted as a striking and characteristic feature of the hand-saw employed, the extreme minuteness of the teeth along the edge and further that their form is dentate not serrate, that is, that the axis of the point is vertical and not oblique. This characteristic enables the saw to cut equally well whether sawing from right to left or conversely. As already noted so small and weak are the teeth that to sharpen such a saw a series of taps along the edge of the blade with a chisel set hammerwise in a handle is sufficient for the purpose.

The further stages in the manufacture of chank bangles vary within wide limits, dependent upon the market to be served. Some of the processes require no great skill and may be carried out by cheaply paid

labour; others necessitate a long training and great expertness on the part of the workers. Of the former is the preliminary rubbing down to smoothness and regularity of the inner and outer surfaces of the working sections. The first stage after the latter come from the sawing shed is to remove as much as possible of the inwardly projecting "beak" which is the remnant of the septum between adjacent whorls left after removing the columella. The projection has to be chipped off with the utmost care as this part of the ring is its weakest point as it marks the junction of adjacent shell whorls and if the work be done roughly or carelessly, the ring is frequently fractured at this place. The tool used is a small form of the hammer used to break away the columella and the apex, one end of the head being sharp, the other blunt. With its aid any acutely projecting portions of the margin are also broken off in order to reduce to the utmost the labour of rubbing down. It may here be noted that owing to the shell having to be cut obliquely and not transversely to the long axis the sections appear to be cut askew, particularly those below the shoulder of the shell, and in consequence the ring in transverse section shows one outer obtuse and one outer acute angle; when the latter is specially prominent it is usually reduced by careful chipping with a light sharp-edged hammer.

The rubbing down of the inner surface of the working circlet is accomplished in an ingenious manner by means of a wooden spindle 18 to 20 inches long, covered with an abrasive coating of fine river sand embedded in a rough lac basis. Several sections are threaded on the spindle which is wedged tightly between the low stool whereon the grinder sits and some rigid second support—a tree trunk outside the house or a post of the verandah workshop. Smoothing is effected by rubbing the rings up and down the spindle till the required effect is attained. For this work, the pay given in one workshop visited, was 5 annas per 100 sections finished, *plus* 1½ anna per 100 as the cost of the lac with which the abrasive is incorporated. The lac used is a coarse quality obtained from the Garo hills and elsewhere in Assam. If the bangles to be made are of the heavy plain pattern required by low-caste Hindu women, the sawn (lateral)

surfaces of the section are now ground down upon a fine grained sandstone slab reputed to come from Mirzapore near Benares. This stone is not unlike the small grave stones used by Muhammadans in some districts; it measures usually 16″ × 8″.

A typical compound bangle made at Haragash in Rangpur District in considerable quantity has the outer face of each section formed of two planes meeting medially at an obtuse angle. The original form of the working ring in transverse section being rectangular, considerable labour is required to rub down the outer face of each ring to the requisite pattern owing to the crude form of the tool used; the work is simple and with an abundant supply of cheap labour, employers feel no need to seek for improved methods. For grinding the outer face of bangles to this pattern workers receive Re. 1 per 100.

More highly finished bangles necessitate decoration by means of carving, drilling, polishing and lacquering. For carving, small tenon saws, and files are used; preference is given to the former whenever possible as they are more flexible, expeditious and durable than files. The greater part of patterns composed of straight lines and grooves are graved in this way by a small saw of the pattern shown in figs. 1 and 2, pl. IX. The edge is of the same minutely dentate form as in the two-handled shell-saws, and is sharpened in similar manner by means of a chisel-edged hammer. An ornamentation frequent on common bangles for country-women is where a V-shaped groove passes circumferentially around it. This is produced by two cuts made by this saw, finished off by filing; when this groove is made in bangles where the outer face has in addition to be first ground to an obtuse circumferential angle, the worker in one factory visited was paid at the rate of Rs. 4 per 100 bangles for these two operations.

The rest used by bangle carvers to support the working sections exhibits some variation in style according to locality. In Dacca a primitive-looking tripod of three thin sticks is employed, two short, the third long. The two former are lashed together in inverted V-form, in such way that a twisted bridge of string connects the two near the apex thus, A. Through the opening thus

formed one extremity of a long stick is thrust to the extent required, thus providing a rough tripod with a short projecting arm at the apex as shown in fig. 1, pl. XI. With the aid of this primitive implement, the carver, who squats at one side of it, has all the support he requires while sawing or filing patterns upon the bangle.

In the northern districts of Eastern Bengal, bangle decorators commonly use a less makeshift-looking rest. In this the two short legs of the tripod are formed of a permanent A-shaped frame made of teak having two short thick legs and a small aperture bored through the upper solid part (fig. 1, pl. IX). When in use one end of a bamboo rod, $1\frac{1}{4}$ to $1\frac{1}{2}$ inch in diameter is thrust through the aperture in the wooden A-frame, thus forming the required tripod rest. The projecting end of the bamboo is whittled down till it is of suitable thickness to suit the workman's taste.

All remuneration is on the piece-work system, with rates varying according to the difficulty and time required by each different pattern of bangle. A few examples will serve to show the wide range in rates. Thus the work of carving and polishing narrow, highly carved churis of the design figured in fig. G, plate XII, sold wholesale at Rs. 2–4–0 per set of six, is paid for at the rate of one rupee for the set, while the workmen receive only two rupees per 100 bangles when these are the plain 5-piece armlets made for Paliya woman at Dinajpur. The dog's head pattern of *bala* bangle figured on plate XII (fig. C) is carved and ornamented with red and green lac at the rate of one rupee for three pairs. Red marriage bangles showing an incised pattern cost from four to five annas per pair to prepare, inclusive of the charges for grinding, engraving and lacquering.

Lacquering.—In Bengal, owing to the custom prevailing there among Hindus which requires a bride to put on for the marriage ceremony two red coloured chank bangles, a considerable trade exists in lacquering and decorating bangles in this colour in the manner prevalent in each particular district. Besides these marriage bangles, shakhas as they are termed, a small amount of decorative lacquering in other colours is placed upon certain patterns of *bala* bangles, worn by better class Hindu women as ornaments and apart from their obligatory marriage shakhas.

The lac employed is ordinary shellac bought in the local bazaars where also the needful pigments are obtained.

The preparation of the coloured lac is done by the workpeople themselves in many workshops, and I was fortunately able on one occasion to be present during the making of a stick of red lac such as is used in colouring red shakhas. For the vermilion that is required, a quantity of the purplish red crystals of *hingol* (cinnabar) is obtained. This is ground down to a fine powder upon a disc-shaped stone of fine-grained granite or gneiss by means of a pestle consisting of a short stumpy pebble, roughly conical in shape (Pl. X, fig. 1). One tola weight of cinnabar to three tolas' weight of shellac is the proportion employed. When the pigment has been sufficiently reduced, two-thirds of the total amount of shellac requisite is first fashioned by heat into the form of a small cup within which the powdered cinnabar is placed, the remaining third of shellac being warmed to pliability and then used to close the aperture of the cup. The next stage is to thoroughly amalgamate the contained powder with the lac walls of the cup, a process calling forth a great amount of dexterity. The whole mass is deftly rotated over a charcoal fire till soft and pliable and then kneaded thoroughly for a considerable time by the help of two short sticks of the size and length of lead pencils. The softened mass is twisted about over the fire and repeatedly "wound" from the end of one stick to that of the other and back again, the operation being repeated till incorporation be complete. The mass is then formed into a pencil-shaped stick and is ready for use.

In the lacquering of a bangle, a short segment of the circle is heated over a small charcoal fire made in the cavity of a wide shallow chatty, a portion of the bangle being laid directly upon the glowing lumps of charcoal. As soon as hot enough, the workman removes the bangle and rubs a portion with the end of the thin stick of lac. A short length only is covered at each application as the bangle soon becomes too cool to melt the lac sufficiently; it is replaced upon the coals and then a fresh segment is covered and so on till the whole circumference has been worked over. In incised patterns required to stand out red upon a white ground, this

effect is obtained by scraping over the surface with a small tool shaped like a bradawl (Pl. XI, fig. 1).

(*f*) Economic position of the trade.

At the present time the industry enjoys considerable prosperity. The demand for bangles suitable for low-caste Hindu women and for the hill tribes is a stable one, influenced by no fluctuations of fashion and dependent only upon the general well-being of the province. When food supplies are abundant with prices at a normal level, and work readily procurable, women of the labouring classes are able to indulge their fancy in bangles; their tastes are conservative and a good demand in consequence is experienced for arm ornaments made from the chank shell. The Swadeshi movement has assisted this industry materially particularly among the more well-to-do castes and during the height of the agitation the demand for more highly ornamented chank bangles increased markedly and gave a much-needed impetus to the manufacture of bangles of the more elaborate patterns. This factor now exercises less influence on the trade, its place being taken by the more healthy influence for good exercised by the advertisement of the best productions of Dacca at the provincial exhibitions held from time to time during late years. Several of the leading Dacca manufacturers occasionally stage exhibits, sometimes even sending workmen to demonstrate the methods employed. These exhibitors have had the enterprise to make up a number of chank-shell ornaments in semi-European style — flower pattern bangles, long chains, brooches, buttons and even small figures of gods; for these there appears to have been a remunerative demand capable of considerable extension as the manufacturers and dealers become more enterprising. An excellent advertising move would be for them to arrange with the dealers in Indian artwares at the great cities most visited by tourists to stock a quantity of the best and most ornamental chank productions turned out by their workshops; both because of the intrinsic beauty of many of these articles and of the interest attaching to their origin and to the custom prescribing their use among a great section of Indian tribes and castes, such articles should find many purchasers among European and American ladies.

As an offset to these favourable factors is the tendency among the women of the better classes to discontinue as far as possible the use of chank bangles in order to emphasize their disassociation from low-caste customs, and in the endeavour to be more 'fashionable' in the style of their personal ornaments; they wish where possible to procure gold bracelets and where their means will not allow of this they too often prefer to wear gaudy glass bangles of European make.

In Dacca and Calcutta labour in the less skilled branches of the industry is abundant and wages are low in consequence. Highly skilled men can however command good pay and were they of a provident disposition they should be very well off.

At the small centres located in country districts, remuneration and conditions of labour are greatly superior to those prevailing in the large towns. There is a fairly regular and stable local demand to rely upon, the necessaries of life are cheaper, and temptations to waste earnings in outbursts of self-indulgence are few; the open surroundings also conduce to a healthier tone both of mind and body than do the slums of Dacca. Best of all, in many places the bangle-maker has some agricultural occupation to afford other interests in life, to give a healthful change from the monotony of a sedentary occupation and a means whereby his savings may be put to remunerative account. In one district I found the local Sankharis engaged in tobacco cultivation as a secondary occupation. Elsewhere I found many of these bangle-cutters cultivating plots of paddy or of jute in the season. The relative importance of the two callings varies considerably as is natural, but they are largely complemental, as there are so many intervals in small cultivation after the crop has been sown when the fields require almost no attention that a Sankhari has no difficulty in carrying on both satisfactorily. Under these circumstances, these men are quietly prosperous, they earn good wages from their chank trade, their fields supply almost all their food and their houses, fairly roomy and well-built and fairly well-ventilated, are made of grass thatch, walls as well as roof, while the supports and rafters are of bamboos which grow luxuriantly everywhere around. Many families are reputed to possess good savings in cash, the money being buried

as is still the usual habit of country people of this class in Bengal.

(*g*) THE CASTES AND TRIBES WHO USE CHANK BANGLES.

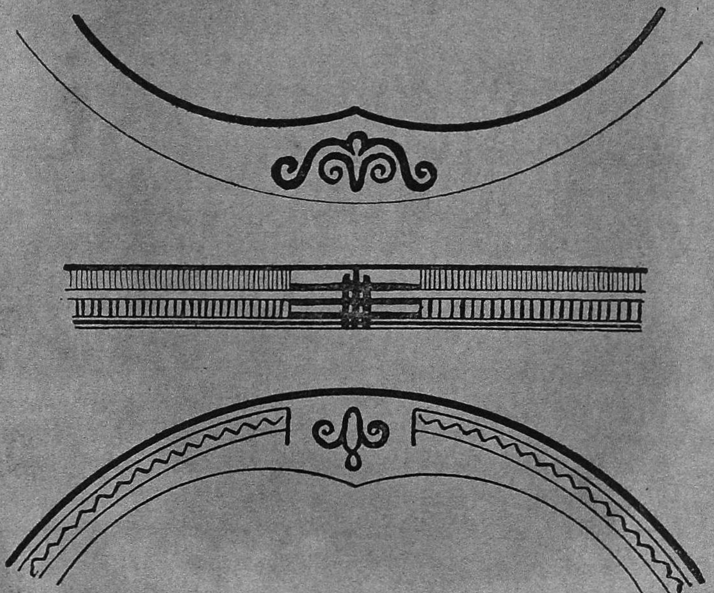
(1) *In Northern India.*

(2) *In the Madras Presidency.*

(1) *In Northern India.*—Although evidence is strong in favour of the belief that the custom of wearing chank bracelets was in old times prevalent throughout the length and breadth of India, more especially in the Tamil country, in the Deccan, in Kathiawar, Gujarat, and Bengal, at the present day only in Bengal, the adjacent hill regions to the west, north, and east and in a few Tamil-speaking districts in the extreme south of India, does the custom continue to be widely observed and of notable social importance.

In Bengal and wherever in the adjoining Provinces of Assam, Behar and Orissa there are colonies of the Bengali race, every married woman of all castes which are thoroughly Hinduised is bound to possess a pair of chank bangles lacquered in vermilion as one of the visible tokens of her married state; the red sankha or

TEXT-FIGURE I.



EDGE AND SIDE VIEWS OF A BENGAL MARRIAGE BANGLE TO SHOW THE ORNAMENTATION IN YELLOW UPON A RED LACQUERED GROUND. FROM PABNA, BENGAL. X 2.

shakha as it is called in Dacca is indeed as necessary of assumption during the marriage ceremonies as is the performance of that other Hindu custom of smearing a streak of vermilion on the forehead or down the parting of the bride's hair or as the wedding ring of English women. Garcia da Orta's curious statement quoted on page 67 is to be explained in the light of this custom; his informants doubtless meant to convey no more than that among the better classes an essential part of the marriage ceremony consisted in placing chank bracelets on the arms of the bride. The women of castes holding good social status appear however to have no great liking for the custom particularly if their husbands be well-to-do, and I was informed that they frequently lay them aside temporarily in favour either of more handsomely carved ones or replace them when means permit by gold and jewelled ones. Chank bangles are occasionally ornamented with gold and set with jewels; the price of these may reach several hundreds of rupees. The great majority of married women, however, wear them permanently, never removing them so long as their husbands are alive. Occasionally some of the modern sankha (marriage) bangles are made in two sections secured together after the bangle is placed on the wrist by means of tiny bamboo pins as it is otherwise impossible to pass one of the right size over the hand without great difficulty and the infliction of acute pain.

In spite of the rapid spread of a desire for bracelets of more showy appearance there are very large numbers of prosperous Hindu households, especially in the country districts, where the womenfolk remain attached to the old and less ostentatious custom of wearing chank bangles solely as ornaments. Among these conservative folk a large demand exists for the handsome products of the sankhari workshops. The ornamental bangles made to meet these requirements are of two kinds called respectively *bàla* and *chùri*. The former are broad bangles worn one on each wrist. The *chùri* on the contrary is always quite narrow, generally $\frac{1}{6}$ to $\frac{1}{5}$ inch in width, and usually of conventional scroll design worn in a set of three on each wrist (pl. XII fig. G).

The use of these ornamental bangles (*bàla* and *chùri*) and also of the red marriage bangle is limited almost entirely to the thoroughly Hinduised sections of the

Bengali people, together with the Hindu communities settled in Assam, Behar and Orissa. Baishnab women however do not wear these bangles according to the Collector of Birbhum. Information received from a Muhammadan source indicates that women of the lower classes of this community in Dacca, Darjeeling and Assam occasionally wear chank bangles as wrist ornaments.

As elsewhere in India, it is the invariable custom in Bengal in orthodox Hindu households for widows to discard all their jewellery on the death of their husbands. In the case of chank and glass bangles, it is usual for the widow to break and throw them away on the first occasion when she bathes after her husband's death. They never resume the use of similar bangles except in the very rare cases where re-marriage is permitted to widows. Tavernier says * "when a man dies, all his relatives and friends should come to the interment and when they place the body in the ground they take off all the bracelets which are on their arms and legs and bury them with the defunct." This burial of the widow's bangles with the dead may still be continued by some castes but as earth-burial is now rapidly being displaced by cremation as orthodox Hinduism secures a firmer hold on the people, this custom must tend to die out. Generally in Bengal the Hindu women wear sankhas as visible tokens of the possession of living husbands. The Hindu Shastras are said to enjoin their use as it is believed that this contributes to the prosperity and longevity of their husbands.

Tuticorin and Rameswaram chanks are necessary in the manufacture of both *bàla* and *chùri* bangles as these require to be made from the finest quality of shells—those possessing a pure white porcellaneous appearance and a dense well-conditioned substance susceptible of high polish.

Among Bengal castes of inferior social status, particularly those whose physical characteristics bespeak Dravidian descent and whose customs are not yet thoroughly Hinduised the use of chank bangles made up into massive gauntlets composed of numerous separate bangles is very prevalent. Prominent among these are

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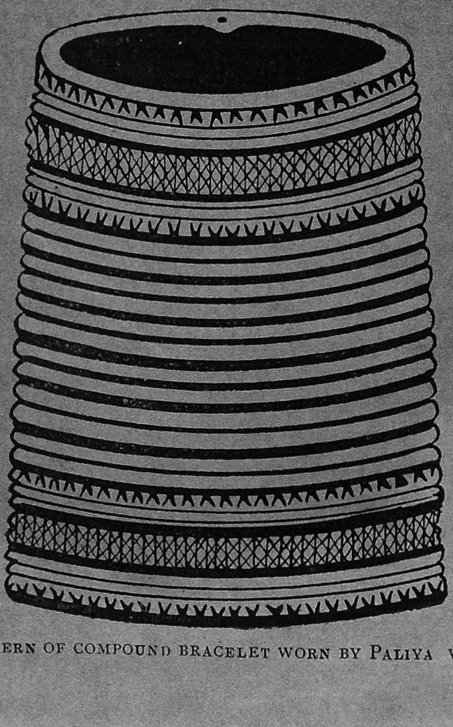
* *Loc. cit.*, Vol. II, p. 285.

the widely spread Kochh tribe in their two principal sub-divisions of Rajbansi and Paliya. It is largely to supply the women of this tribe with their characteristic ornaments that the chank bangle workshops in Dinajpur and Rangpur exist as in these districts the tribe has its chief settlement with an approximate total of one million individuals. Kuch Behar and Jalpaiguri account for another half million, while considerable numbers are found also in Purnia, Maldah, the Darjeeling Terai, Bogra, Murshidabad, Nadiya and Dacca. The Rajbansi and Paliya gauntlets are composed usually of ten separate bangles. As the wearers belong largely to the labouring and agricultural classes, the bangles forming these gauntlets are broad and thick, frequently without any ornament whatever; where decoration is attempted, it consists of simple line patterns made of shallow groovings which impair very little the strength of the bangle and yet are very effective and elegant (Text-figure 2). Neither are they usually polished, hence dead shells from Jaffna are largely employed in this manufacture, although inferior shells of the better qualities from the Indian side are also extensively made use of.

TEXT-FIGURE 2.



GAUNTLET PATTERN OF COMPOUND BRACELET WORN BY PALIYA WOMEN, BENGAL.

The Muchi is another important Bengal caste where the wearing of numerous chank bangles is a distinctive custom among the women. This is a leather-dressing and cobbler caste, socially a shade higher than the allied Chamārs from whom the Muchis appear to be an offshoot. One of the obvious distinctions between the women of these castes lies in the character of the bracelets worn. Thus while the female Chamār prides herself on huge bracelets of bell metal adorning her arms, the Muchi woman always substitutes chank bangles. The Muchis, like the Paraiyar of the South, are largely the caste drummers of the province and as they are fond of the violin and the pipe are usually employed as musicians at Hindu weddings.

In Western Bengal and in Behar the Santāls take the place occupied by the Rajbansis and Paliyas in North-Eastern and Eastern Bengal as the chief chank bangle wearing tribe. Many of their women follow the same habit of disposing of a number of chank bangles, three to five usually, as a massive cuff-like gauntlet or compound bracelet. These people being generally poor, the quality employed for these compound bracelets is inferior and red and yellow lac are freely used upon them to enhance their appearance and to disguise imperfections. Many indeed are too poor to afford these ornaments and others belong to families which do not observe the custom; in Birbhum which may be taken as a characteristic Santāl district, it is estimated that about half the female Santāl population follow this custom. Sometimes Santāl girls wear them from an early age but generally they are assumed at marriage. It has no religious significance and marriage may be performed without the putting on of these bangles which are worn more for ornament and because of custom than for any more serious reason. Like the Hindus, Santāl women break and throw away their bangles on the occasion of widowhood, re-assuming others, if they wish, if they remarry. Dead shells are often employed by the cutters for Santāl bangles.

Risley states (II, p. 225) that the Santāls in point of physical characteristics may be regarded as typical examples of the pure Dravidian stock and in view of the similar origin attributed to the Kochh tribe which includes both the Rajbansi and the Paliya, this becomes

a matter of great significance as well as of much difficulty, for whereas the Kochh people are professed Hindus, the Santāls hold the animistic beliefs characteristic of Non-Hinduised Dravidians. However Oldham as quoted by Risley (I, p. 492) states that "the adhesion of the Kochh tribe to Hinduism is comparatively recent as shown by their own customs as regards burial, food and marriage."

The section of the Kurmi caste found in Chota Nagpore and Orissa also wear chank bangles. In view of what has been said above in regard to the Dravidian origin of the Kochhs and Santāls, it is of importance to find that Risley (I, p. 530) considers this territorial section of the caste as undoubtedly Dravidian, as shown by their physical characteristics, religious beliefs and social customs. In appearance, he says that in Munbhum and the north of Orissa, it is difficult to distinguish a Kurmi from a Bhumij or a Santāl. In their religion the animistic beliefs characteristic of the Dravidian races are overlaid by the thinnest veneer of conventional Hinduism, and the vague shapes of ghosts and demons who haunt the jungles and the rocks are the real powers to whom the Kurmi looks for the ordering of his moral and physical welfare.

Alike with the Santāls the internal structure of that branch of the Kurmi caste living in Chota Nagpur and Orissa is founded upon a distinct and well-defined totemism in which a large proportion of the totems are still capable of being identified. Risley (II, appendix, p. 88) enumerates 60 totemistic sections or septs in this caste, among which is one termed Sankhawār whose members are prohibited from wearing chank shell ornaments. Among the Santāls, the place of this sept is taken by one called Sankh, wherein all individuals are forbidden, under pain of caste punishment, the use of the chank shell in any form; they may neither cut, burn, nor use the shell, nor may the women of this sept use it in personal adornment (I, p. xliii).

The prevalence of the use of chank bangles among these Dravidian races, the present animistic beliefs of the Santāls and Chota Nagpur Kurmis, and the comparatively recent renunciation of the same cult by the great Kochh tribe, taken in conjunction with other facts and especially with the widely spread archæological

finds detailed elsewhere in these pages, point to the use of chank bangles as having had a purely Dravidian origin and as having been a custom prevalent and solidly established among at least certain sections of the race throughout India anterior to the advent of the Aryan invaders and the rise of the Brahmanic faith. The cult of the chank would therefore appear to be one adopted (and modified) by the Brahmans from the religious beliefs which they found indigenous to India.

Finally, in the hill tracts of Chittagong, we find the women of the Maghs, a race of Indo-Mongolian extraction and Buddhists by religion, using very broad unornamented sections of chank shells as bracelets in similar manner as we shall next see is the habit in Thibet and Bhutan, inhabited by other Mongolian races. To supply the needs of the Maghs, bangle cutters are established in Chittagong ; these work-people are chiefly Muhammadans and the work they do is of the roughest and crudest description in conformity with the undeveloped artistic taste of their customers who appear to wear these bracelets rather as amulets than as ornaments. Broad arm ornaments of similar simple form are used by the Papuans and by the wild inhabitants of several groups of the Melanesian islands ; sometimes round the wrist, sometimes on the upper arm above the elbow. I do not know however, whether the shell employed in these instances be Turbinella or not. Among these island tribes it is the men who wear these ornaments.

Outside of Bengal and Assam the only considerable demand for chank bracelets comes from Thibet and Bhutan. The trade is one of long standing for Tavernier in 1666 found Bhutanese merchants taking home from Pabna and Dacca bracelets sawn from "sea-shells as large as an egg." He also states that 2,000 men were occupied in these two places in making tortoise shell and sea-shell bracelets and "all that is produced by them is exported* to the kingdoms of Bhutan, Assam, Siam and other countries to the north and east of the territories of the great Moghul" (*loc. cit.*, p. 267).

Now "Bhot" happens to be the native name for the southern section of Thibet inhabited by a settled

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* Evidently a *lapsus calami* as the custom of wearing chank bangles was even more prevalent in Tavernier's day among Bengali women than it is to-day, *vide* Orta, *loc. cit.*

population in contradistinction to Chang, the northern region inhabited by nomads, while Bhotia is still used to denote people of Thibetan race living on the southern slopes of the Himalayas.* Hence Tavernier's meaning will be correctly read if we substitute Thibet and Bhutan wherever he uses the word Bhutan, more particularly seeing that Thibetan trade was long in the hands of Bhutanese intermediaries and Bhutan repeatedly claimed as a dependency by the rulers of Thibet. Thibetan manuscripts † make it clear that the present State of Bhutan originated in a colony of Thibetans; the relations between the two countries have always been most intimate. The chain which bound Bhutan to Thibet may have been a loose one, but history shows that it was held by Thibet and tightened on occasions. Tavernier's time was antecedent to the Chinese re-assumption of sovereignty over Thibet in 1720, and coincided with a period when Bhutan was tributary directly to Thibet and so may have been included as a portion of Thibet in the view of foreigners.

Warren Hastings also appears to have used the word Bhutan as synonymous with Thibet in his earlier letters to the first mission he despatched to open up trade relations with Thibet, at a time when trade with the latter country was carried on through the Bhutan passes by the intermediary of Bhutanese merchants. When Bogle, Warren Hastings' emissary, reached Bhutan in 1774, he found the trade of the country almost entirely in the hands of the Deb Raja, his ministers and governors, who held the monopoly of it both with Bengal and Thibet. Trade with Bengal was maintained by means of annual caravans to Rangpur and there was also trade with Dinajpur. Warren Hastings subsequently established an annual fair at Rangpur for the benefit of Bhutanese merchants whose expenses were paid by the Bengal Government who also erected stables for their horses and houses for themselves.‡ From Rangpur and Dinajpur the Bhutanese took back stocks of Maldah cloth, coarse linen, hogs and salt fish as the major items of trade, while among the smaller

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* The common designation of Thibetans settled in Sikhim is Lhopa Bhotia, literally "Thibetans of the South." Risley *l.c.* vol. I, p. 217.

† J. Claude White, "Sikhim and Bhutan," p. 288, London ,1909.

‡ J. Claude White, *loc. cit.*

were counted supplies of tortoise shell, coral, amber and chank ornaments. The last named commodity comprises in present day trade massive single-piece bracelets without ornamentation, tabular pieces of shell and some of the columellæ which are broken out from the shell before it is sawn into circlets.

Chank bangles appear to be worn very generally throughout Thibet, from Ladakh in the west to the Kham country in the east. Neve records * seeing the poorer women in Kashmiri Thibet wearing broad shell-bangles in shape like a cuff on both wrists, while on the march of the British expedition to Lhassa in 1904 they were noted as in frequent use by Thibetan women. This ornament is assumed early in life while the hand is still small and pliable; after a few years it becomes impossible to remove it without breakage which these women will suffer only in the last resort, as it cannot be replaced except by one of large diameter which will fit more loosely on the arm than they like. A medical officer with the Thibet mission has informed me that in one instance a Thibetan woman was brought to him for the treatment of a festering wound on the wrist. On examination the cause of the trouble was found to be the presence of a chank bangle so small that the wrist had been wounded and circulation impeded; gangrene was imminent and although the woman was loth to part with her bangle it had to be filed off to save the hand.

The export of round and square discs of chank shell to the Buddhist countries of the north appears to be much less than in Tavernier's time, as it is now comparatively insignificant. From information gleaned in Dacca, it would appear that these tabular pieces are usually worn suspended from the hair as charms, and my informants stated that this custom is found principally among Thibetans, (Bhotia as they term them) and also to some extent among the Nāga and Khasia peoples. Among the Nāgas, the discs are employed to ornament the men's hair-bedecked helmets. As already noted, some Bhotia tribes are also said to wear the columella of the chank as an ear-ornament and Prince Henri d'Orleans † found the women of the wild

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* "Beyond the Pir Panjal," London, 1912.
† "From Tonkin to India," English Translation, London, 1898

Lissus, a section of the Lolo tribe, mountaineers living in the upper valley of the Mekong in Yunnan, employing chank shell discs to ornament their Chinese caps. It may be that these Lissus and cognate tribes represent those chank jewel wearers whom Tavernier refers to as belonging to the kingdom of Siam. In this latter country at the present day I know of no utilization of chanks in personal adornment.

The chank is one of the eight lucky signs recognized by Buddhists of the Northern cult and as such is constantly reproduced in Buddhist ornamentation in Thibet and Bhutan.* It may therefore be inferred that the use of it in personal adornment has a like reason; whether in the form of a bangle, a cap or a hair ornament, a necklace or a breast disc, it is employed as a talisman to ensure good fortune, and possibly even as an amulet against the evil eye, as is the chank shell placed on the forehead of draft bulls in Southern India.

(2) *The Tribes and Castes which wear Chank Bangles in the South of India.*

In the Madras Presidency and the associated native states, the castes whose women systematically wear chank bangles are few and if we except the wandering tribes of the Lambadis (or Brinjaris), Koravars and Kurivikkarans, the custom appears confined to a sub-division of each caste or tribe. Whether it had a totemistic origin and significance as it still has among non-Hinduised tribes in Bengal, Behar and Chota Nagpur is not at present clear. If it had, the original tribal sept, usually exogamous, has become changed to a caste sub-division, invariably endogamous. And whereas among the septs of those animistic tribes in Northern India which are named after the chank this shell is taboo with them, it forms the characteristic ornament of the women of the caste sub-divisions named after it, in Southern India.

Only in the Kongu country, which coincides roughly with the present inland districts of Coimbatore and Salem, does the custom continue to flourish at all strongly. Coimbatore is the great centre of the custom

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* J. Claude White, *loc. cit.*, p. 46.

for there the numbers of chank-bangle wearers greatly exceed those found in any other district. The Collector reports eleven castes and sub-divisions as following this custom, viz.:—

(1) Pala Vellalas.
(2) Puluvans (so-called Puluva Vellalas).
(3) Konga and Golla Idaiyans.
(4) Konga Shanans.
(5) Konga Vannans.
(6) Thotti Chukkiliyans.
(7) Sangu, Konga, Sangudu or Sanguvalai Paraiyans.
(8) Thottiya Naiks.
(9) Okkilians (not universal).
(10) Kurumbars.
(11) Lambadis in parts of Kollegal and Gobichettipalaiyam divisions.

The custom is associated particularly with those caste sub-divisions whose territorial cognomen indicates a long settled residence in the Kongu country (Coimbatore and Salem). The Konga sub-divisions of the Idaiyar, Paraiyar, Vannar and Shanar castes have this custom in common and as several other castes in Coimbatore also adhere to it, we may infer that at one time the custom was general in the Kongu country among at least the generality of the lower castes.

Another caste sub-division where the women wear chank bangles is that of the Sangukatti Idaiyans. Among them the marriage ceremony requires, as in Bengal, the placing of a chank bangle on one of the bride's wrists.

Among Coimbatore castes the chank bangle is worn always upon the left wrist, usually singly but occasionally a pair in certain cases, *e.g.*, among the Konga Paraiyans.

The wearing of these bangles is considered as a symbol of the permanence of the marriage tie, a belief probably derived from the custom of breaking the bangle after the death of the husband. The Collector of Coimbatore states that a widow discards her bangle one month after her husband's death. He adds that if a woman accidentally breaks her bangle, she thinks it unlucky and regards it as an omen that her husband will chance on some evil; when the husband is sick the wife prays that it may be her good fortune to wear the bangle during her whole life. A woman considers it improper to appear before her husband or in public without the

bangle. The wearing of this ornament appears to be followed in Coimbatore largely because it is an ancient custom, with no further significance beyond what is implied above. It is not now connected with belief in the evil-eye though it is said to have had this significance in former times. The general belief in the efficacy of the chank as a specific against skin diseases may however be counted as one of the obscure reasons for its continued usage.

According to information received from Mr. V. Govindan, in the case of the sub-divisions of the Vellalans and Idaiyans of Coimbatore where caste custom rigidly enforces the wearing by their women of a chank bangle, no married woman or girl of marriageable age is permitted to appear in public without her chank bangle, and Mr. Govindan states that in the case of Chanku Vellalas if any woman does so appear she is outcasted and not readmitted until she has paid a fine which may amount to as much as Rs. 10. The proceeds of the fine are utilized to pay the expenses of giving a ceremonial dinner to the caste Panchayatdars or village elders. Widows, as usual elsewhere, have to discard these bangles along with their other ornaments on the death of their husband.

A single bangle only is used, worn on the left wrist. Should the owner break the bangle by accident, she replaces it at the earliest opportunity and till she so does, must remain indoors and not be seen by caste people. The caste rules attach as much importance to this bangle as to the tali or marriage badge tied around the neck of married women. The Vellalan and Idaiyan chank bangle is stout and thick, measuring from $\frac{3}{4}$ to 1 inch in width. According to this informant it is left quite plain, without incised ornament, in order the better to resist rough usage. The inner surface is roughly filed and smoothed, the outer is left unworked. From the statement of the Collector of Coimbatore it would however appear that this is not the universal custom as he mentions instances of well-to-do Puluva Vellalans wearing ornamental bangles costing from Rs. 3 to 5 per pair.

These bangles, the plain ones made at Kilakarai on the Rāmnād coast, are not usually to be bought in the inland bazaars. Bangle peddlers who pass from village

to village hawking glass bangles generally carry a few. The demand for them is very restricted for though it is compulsory upon the women of the chank section to wear them, they usually require only a single one in the course of their life and this even may have come to them from the mother or other female relative. The same bangle may be worn by two or even three generations in succession. The usual cost of such a bangle is four annas but in cases of emergency when one is broken accidentally, the bereft may willingly pay even a rupee to have it replaced.

The district where this custom was actually observed by Mr. Govindan in operation among Vellalans and Idaiyans was Coimbatore and so far as I have been able to ascertain no chank-bangle wearing sub-division of either of these castes is found outside the district named. The Collectors of Salem, Tanjore, South Arcot, Madura and Trichinopoly, who have been kind enough to institute enquiries in the various taluks of their respective districts, agree in stating that they can find no evidence of any section of the Vellalar and Idaiyar castes following this custom; with regard to Tinnevelly, my own experience is that only children of various lower castes wear chank-bangles and that solely as amulets.

The practice is more general among low castes. The Collectors of Madura and Trichinopoly both inform me that among Paraiyans, Chukkiliyans (leather workers, etc.), Oddans, Koravas and the Naick sections known as Kavaraja and Thottiya Kambalathans together with the wandering tribe of Lambadis, the custom of wearing chank-bangles is found to prevail here and there in both districts. There appears to be no general observance of the custom—in some villages and taluks none among the women of the castes named wears chank-bangles; elsewhere, as in the Nāmakkal Taluk (Trichinopoly District), a definite section of the Paraiyan caste called Sengudimi Paraiyans adopts this ornament as a distinguishing sept distinction, while in other parts of the country, the women of these various low castes wear it chiefly if not entirely for its ornamental value. The custom appears to be dying out, as witness the vagueness of the people who still adhere to its observance as to the reason for so doing, its partial and sporadic geographical distribution in the

districts where it lingers, and the comparatively small numbers who adhere to it. As a typical instance of the irregular distribution of the custom, the report of the Collector of Trichinopoly states that in the Musiri and Kārūr Taluks, no people wear chank-bangles; in Nāmakkal Taluk only the Paraiyan sept called Sengudimi Paraiyans wear them; in Udaiyārpālaiyam Taluk the habit is confined to Koravans and Lambadis; in Trichinopoly and Perambalūr Taluks to Chukkiliyans and Paraiyans, while in Kulittalai Taluk besides the two castes just named, the Oddans, Koravans and Thottia Naickers are given as castes following the custom—it is to be noted that all are amongst the lowest of castes, constituting what may be termed the inferior labouring population. The bangles employed are manufactured in Kilakarai and pass to Trichinopoly by the intermediary of traders in Madura. The price in Trichinopoly town is from Rs. 3 to 4 per 100 bangles, all very roughly made, with little or no ornamentation.

In Tanjore and Salem the Paraiyans and Chukkiliyans use chank-bangles in certain villages and these Salem Pariayans are said to belong to the Konga division as in Coimbatore. In both districts the Lambadis and Koravas have the same custom and the Collector of Tanjore adds that the women of the Uppu Koravar, Panni Koravar, and Vari Koravar sub-divisions together with the Oddar and Domba castes all agree in following the habit. He states that the Koravas put on the bangles during the marriage ceremonies.

In Salem the Malayali women of the Chitteri Hills, Uttangarai Taluk, also use chank-bangles.

Hawkers called Dasam Chetties, who bring their wares from Rāmēswaram and Kilakarai, attend village fairs and temple festivals with these bangles in Salem and Coimbatore, charging from 4 to 12 annas a pair. In Coimbatore well-to-do Puluva Vellalans not infrequently wear bangles of superior quality costing even Rs. 3 to 5 per pair; these probably are brought from Calcutta, as no expensive patterns are made at Kilakarai. In Tanjore about the same prices prevail, but here the most expensive, said to come from Calcutta, are said to cost one rupee per pair; common qualities as usual come from the Rāmnād coast.

In the Nilgiri hills, especially in Ootacamund, Konga Paraiyan women who have come from Coimbatore are often to be met with wearing chank-bangles. Their sub-division is considered one of superior standing and the people belonging to it will not act as sweepers. The bangle is always worn on the left wrist; frequently two are worn, always plain and massive, and about $\frac{3}{8}$ inch in width, exactly similar indeed to those worn by Chanku (Pulluva?) Vellalas.

The women of the Kota hill-tribe in the Nilgiri hills have an allied custom, but instead of a massive bangle cut from the entire shell, they wear around the left wrist a bracelet of roughly-made chank beads strung on a thread. When chank beads are not obtainable they wear a string of white glass beads as near the colour and shape of the usual chank beads as they can obtain. In answer to my questions, the elders of a Kota village situated close to Kotagiri informed me that all married women must possess and wear one of these bracelets on the left wrist together with two massive copper bangles on the right wrist during their husband's life. They are assumed however before marriage and the putting on of the chank bracelet is not a part of the marriage ceremonies. On the death of the husband the widow discards this with her other ornaments, but is permitted to resume them after a decent interval of mourning—three months according to my informant. It is to be noted that the wife's ornaments are not broken or destroyed at the husband's death as is the custom among the chank-wearing Hinduised plains-people. At the woman's own death they are put to burn with her body on the funeral pyre. The Kotas can adduce no special reason for the wearing of these bracelets, except that their god Bhagawani long ago ordered that their women should do so.

The women of the Irulas, another of the Nilgiri tribes, also occasionally wear chank-bangles. Thurston (II, 382) mentions seeing one on an Irula woman's right wrist in company there with eight brass bangles and one of iron; on the other wrist were three lead and six glass bangles and one composed of glass beads. My own experience does not lead me to consider this as a definite custom. None of the Irula women whom I have seen

wore chank-bangles. Iron bangles are preferred and it is common to see them wearing as many as three iron bangles on each wrist. Those on the right wrist are usually made from plain iron rod, whereas on the other wrist one at least is ornamental, usually made from a flat band to the free ends of which, hammered into rings, are attached large numbers of ornamental iron-wire pendants shaped like the "eye" part of domestic "hook and eye" fasteners.

From the foregoing it is seen that chank-bangle wearing is confined to the Tamil districts in the south of the Madras Presidency. It is unknown in the central and northern sections—the Madras Deccan and the coastal Telugu districts—except in respect of the wandering Lambadis; the Collector of Kurnul informs me that chank bangles for sale to the local representatives of this tribe are occasionally brought from the Raichur side (Hyderabad State), a significant fact as the Raichur Doab is one of the localities where Mr. Bruce-Foote found numerous fragments of chank factory waste, indicative of the former existence of a bangle-making industry in the vicinity of his discoveries. Where these modern Raichur bangles come from I do not know, but I should expect them to be of Bengal manufacture.

PART III.—THE ROLE PLAYED BY THE CHANK IN INDIAN RELIGION AND LIFE.

(1) LEGENDARY AND HISTORICAL.

When and how the cult of the chank as a religious symbol originated in India are questions which go back so far beyond any traditions now existing that the utmost difficulty confronts us when we seek to find their solution. One main fact alone seems certain and that is the non-Aryan origin of this symbol. The Aryan-speaking hordes which descended upon the Punjab through the north-west passes perhaps 2,000 years or more B.C., certainly did not bring the custom with them. They, the warrior ploughmen and herdsmen of the plains of Eastern Europe and Western Asia had never seen the sea; they knew not as yet the deep sonorous boom of the snow-white chank—a note on a curved cattle-horn was with them the signal between scattered bands, while their hymns tell us that in music they used the drum, the flute and the lute. Vishnu, the God whose emblems include the chank, is barely mentioned in the Rig-Veda and the few Vedic hymns to him were probably composed after long intercourse had been established with the Dravidians, the chief race whom the invaders found in possession of the new land. He is almost certainly one of the gods borrowed from the indigenous people as his complexion is characteristically represented as dark-hued whenever his image is shown in colour.

When the hungry swarms of Aryan tribesmen descended upon north-west India, the whole land with the exception of the north-east corner, was occupied by a long-settled Dravidian population, split into many states and tribes vastly differing in civilization. Many tribes, particularly those living in the mountains and dense forests and less accessible districts, were in the lowest possible stage, naked savages living on fruits and small game and maintaining a precarious defence against wild beasts by means of rude stone weapons and cudgels. In the south, particularly in the maritime districts, a high civilization developed at a comparatively early date and

when the Aryan invaders were fighting their way into the Punjab against wild and semi-savage tribes, in appearance and customs probably much like the Santals 50 years ago, the men of the south were then or shortly later engaged in commercial relations with Babylon and the coastal districts of the Persian Gulf and Red Sea and partly through the stimulation received from this intercourse with these seats of ancient civilization and partly from indigenous effort, these southern Dravidians were evolving a language unsurpassed for its richness and flexibility and its power to express with perfect felicity the highest flights of imagination which poets and philosophers can reach, together with a material civilization of no mean order. It is to these coastal Dravidians settled in the prosperous sea-ports situated on the western shore of the Gulf of Mannar or to men of the same race living on the Kathiawar coast that the first use of the chank must be traced. Both localities are the seats of pearl fisheries and the centres whence much oversea traffic flowed coastwise to Semitic lands and to Egypt. The chank and the pearl-oyster are usually associated in Indian waters, the chank on the sandy stretches interspersed with the rocky patches which form the habitat of the pearl-oyster ; pearl fishers often bring chanks ashore and thus the beauty of their snowy white porcelain-like massive shells would early become familiar to the merchants gathered from many lands to purchase pearls. But this accounts in no way for their employment as a religious symbol.

The earliest notices of the use of the chank are entirely of a secular nature and this fact and the context of these earliest references can be made, I believe, to furnish the required key. These first notices occur in the two great Indian epics, the Ramayana and the Mahabhārata. In these we get frequent reference to the employment of the chank as a martial trumpet by the great warriors whose more or less mythical exploits are recounted. Particularly is this the case in the Mahabhārata, where in the Bhagavat-Gita we find the heroes heartening their forces to the fight with loud blasts on their battle-conchs. Each hero has his famous conch distinguished by some high-sounding name, just as the famous swords of European legendary heroes were

frequently given names that have become immortal in song and story. The beautiful Excalibur wielded by Arthur in many glorious fights, Charlemagne's famous brand Joyeuse; and the magic Tyrfing so oft the theme of Viking sagas, have their parallels in the names of the conchs of the Mahabhārata heroes.

When the opposing hosts of Kauravas and Pandavas confronted each other on the field of Kurukshetra, we read in the Bhagavat-Gita (verses 11 to 19) how the prelude to battle was the deafening clamour sounded by the leaders on their great conchs.

"The Ancient of the Kurus, the Grandsire (Bhisma), the glorious, sounded on high his conch, "The Lion's Roar."

"Then conchs and kettledrums, tabors and drums and cowhorns, suddenly blared forth with tumultuous clamour.

"Stationed in their great war-chariot yoked to white horses, Mādhava (Krishna) and the son of Pāndu (Arjuna) blew their divine conchs.

"Panchajanya was blown by Hrishikisha (Krishna) and Devadatta by Dhananjaya (Arjuna). Vrikodara (Bhima) of terrible deeds blew his mighty conch, Paundra.

"The king Yudhishthira, the son of Kunti, blew Anantavijaya; Nakula and Sahadeva blew their conchs Sughosha and Manipushpaka.

"And Kāshya of the great bow and Shikhandi, the mighty carwarrior, Dristadyumna and Virata and Sātykai, the unconquered.

"Drupada and the Draupadeyas, O Lord of Earth, and Saubhadra, the mighty-armed, on all sides their several conchs blew.

"That tumultuous uproar rent the hearts of the sons of Dhritarashtra, filling the earth and sky with sound."

Here the names of the conchs possessed by all the five Pandava brothers are given,—Paundra, Devadatta, Anantavijaya, Sughosha and Manipushpaka. Paundra appears to have been named from Pundra, a demon killed by Bhima; the others signify respectively God-given, Eternal Victory, Sweet Voice or Honey-tone, and Jewel-blossom.

Here too we hear for the first time the name Panchajanya given to the conch of Krishna, King of the Yādavas, who had espoused the Pandavan cause. Around this famous shell many legends have gathered and now we see it held on high in most figures of Vishnu, who is considered by Hindus to have been re-incarnated in Krishna, the wise and good king of the Yādavas. According to one legend Panchajanya was originally the shell home of a terrible marine demon, Panchajana, so named as he was a foe to the five kinds of beings (*jana*), to wit, gods, men, gandharvas, serpents and ghosts or non-incorporated spirits. Panchajana lived on the sea bottom and at last filled the measure of his misdeeds by seizing the son of Sandipani, who had taught Krishna the use of arms. The God, fearless of consequences, rushed to the help of the child assuming the form of a fish and after a terrible struggle vanquished the demon and brought away his shell as a trophy, since accounted one of the emblems of Vishnu and Krishna.

Tod, the author of the famous *Annals of Rajasthan*, in his "Travels in Western India" published 1839, in describing his visit to Dwarka and its neighbourhood gives a variant of this story and as the passage is most interesting no apology is needed for its reproduction in full. Under date January 1, 1823, he writes, "Crossed over to the Pirates' isle, emphatically called Bate, or 'the island,' but in the classic traditions of the Hindu, Sankhodwara, or 'the door of the shell,' one of the most sacred spots of his faith. It was here that Crishna * or Kanya acted the part of the Pythian Apollo, and redeemed the sacred books, slaying his hydra foe, Takshac, who had purloined and concealed them in one of those gigantic shells whence the island has its name. The whole history of Kanya, or Crishna, who assumed the form of Vishnu, is allegorical, but neither devoid of interest nor incapable of solution. There is no part of their mythology more easy of illustration than this, which is allusive to the sectarian warfare carried on at this period between the new sect of

* Tod notes "Kanya, or Vishnu, resembles the sun-god of the Egyptians in name as well as symbols. Kan was one name of the sun in Egypt, and his eagle head is a well-known type." With regard to the extract given in the text, it has to be remembered that Tod's mythological explanations are not always reliable.

Vishnuvites and the more ancient one of Budha. The races who supported the religion of Crishna are typified under his emblem, Garuda, or the eagle; while their wily adversary, the Budhist, is figured by the Tacshac, Naga, or serpent, a denomination given to the races of northern origin, which at various periods overran India, and of which were Taksiles (the friend of Alexander, the site of whose capital is still preserved in the Memoirs of Baber) and the still more famed Tacshac Salivahan, the foe of Vikrama. In the legend of the Yadu (Yadava) prince, Crishna (himself a seceder from the faith of Budha Trivicrama to that of Vishnu, if not its founder), receiving the sacred volumes from his hydra foe at this remote point of Hinduism, as well as his first combat with him in the Jumna, we have but the continuance of the same sectarian warfare, in which Crishna was in this instance successful, driving them before him both in the north of India and here: thus, his title of *Rinchor* was given on his defeat by Jarasindha, the King of Magadha, of the heretical faith, and at length these religious and civil conflicts led to his death, and the dispersion of the Yadu race of which he was the chief support. These Yadus, I surmise to have been all originally Budhists, and of Indo-Getic origin, as their habits of polyandrism alone would almost demonstrate; and when we find the best-informed of the Jains assuring us that Nemnat'h, the twenty-second Budha, was not only Yadu, but the near kinsman of Crishna, all doubt is at an end; and I am strongly inclined to pronounce decidedly, what I have before only suggested, that the Yadus are the Yute, or ancient Getes of the Jaxartes, amongst whom, according to Professor Newmann from Chinese authorities, one of the Shamanean sages sprung, eight hundred years before Christ. Both Nemnat'h and Sham-nat'h have the same personal epithets, derived from their dark complexions, the first being familiarly called Arishta-Nemi, 'the black Nemi,' the other Sham and Crishna, both also meaning 'dark-coloured'; and when this is not only confirmed by tradition, but the shrine of Budha itself is yet preserved within that of Crishna at Dwarica we have no reason to question that his faith, prior to his own deification, was that of Budha."

Always is Krishna's chank represented as a sinistral abnormality, and legend pictures to the mind of the devout Hindu every shell of this rare form when alive as a marvellous production receiving the homage of thousands of chanks of ordinary form, which crowd around it on all sides. Another myth is related by Baldæus, the chaplain to the Dutch forces which wrested Ceylon from the Portuguese, to the effect that Garuda, the eagle vehicle or attendant (almost certainly the hawk-headed deity of Assyria) of Vishnu flew in all haste to Brahma and brought to Krishna "the chianko or kinkhorn twisted to the right." * Vishnu derives several of his alternative names from his chank symbol, as Chankapāni, the "chank-armed," and Chankamēnthi, the "chank-bearer."

Krishna, when represented as a herdsman under the form of Govinda or Gopala, usually bears a conch in his hand and possibly the origin of this may be sought in the use a herdsman may make of it to call together his scattered herd just as the shepherds of Corsica and Sardinia at the present day use a great Triton shell (*Tritonium noduliferum*) for a like purpose.

A curious and most significant fact is that the twenty-second Tirthankar of the Jains, Nemi or Nemnat'h, who, legend says, was the son of King Samudravijaya of the race of Harivansa and a cousin to Krishna, has a conch as his emblem and is represented in Jain statues as being of a black colour. The black image of Nemi in the Nemnath temple on Mount Girnar in Kathiawar is a well-known example. The dark hue under which Vishnu and Krishna are always represented by Hindus and the black colour of his cousin Nemi, the Jain Tirthankar, go far to show that these gods and teachers belonged not to the Aryan race but to nations of Dravidian origin in the forefront of the earliest indigenous civilization in North India or Hindustan. With them in particular, is the conch most definitely associated; there is strong presumption on this and other grounds already referred to, to believe that it was the

* With the contradiction which exists between East and West in so many matters, the abnormal twist in these shells is termed left-handed or sinistral by Europeans, whereas Indians term it right-handed. They view it from the mouth end, we from the apex and accordingly confusion is frequent in conversation on this subject with Indians.

Dravidians who first employed the chank as a battle-conch and that this custom was adopted by the Aryan invaders as blood connections began to be formed in increasing numbers with the Dravidian nobility of the land and when certain of the Dravidian gods were admitted to the Aryan pantheon. The Aryans would be particularly eager to acquire fine conchs both for use and ornament; their deep-voiced boom would prove their utility as battle-trumpets to enspirit and to give signals, while their rare white beauty would appeal to the religious sense as making them fit vessels wherewith to offer libations to their gods. To an inland people the beautiful products of the sea assume a double value from their strangeness and rarity and mysterious origin. To-day the people of Thibet, cut off from all knowledge of the sea, esteem pearls and red coral, tortoise-shell and amber, among the greatest treasures within their knowledge. The wild Nagas of the Assam hills equally prized the snow-white chank shell itself till some 50 years ago, using it as part of their accepted currency at the rates enumerated on page 166. And when the extreme rarity of a reversed or left-handed chank found its way perhaps once in several centuries to the primitive trading centres of the people of Hindustan—to the people of the inland middle land,—can we wonder at the enormous value they set upon it and the mystic powers they endowed it with? As the Aryan hosts advanced into India they must have captured numbers of battle conchs from time to time and there can be no doubt they early adopted them in place of their own less sonorous cow-horns. Indeed the boom of the conch has been the battle signal throughout the ages in India, and this custom has lasted almost to the present day. Ancient Tamil and Rajput poems descriptive of battles and raids continually refer to the clamour of the conchs blown as the opposing parties approached each other; the etiquette of old Indian chivalry required a prelude of challenging conch-blowing before the serious fight was begun; the long-drawn hollow sonorous note of the chank often greeted early British commanders as they led their forces to the assault; even until the beginning of last century Marathi and Pindari chiefs called their followers together and

heartened them for the fray by loud blasts on conch-horns. Even in very recent days the chank's voice has called our enemies to the attack, and this too by other foes than Hindus. The graphic pen of Percival Landon in his "Lhasa"—an account of the British Mission to Thibet in 1903-4, in describing a night cannonade of the British Commissioner's post outside of Gyantse by the Thibetans, paints a word picture worthy of quotation "As one peers out into the warm night, a long monotone is faintly droned out from the darkness ahead. It is one of the huge conch shells in the jong and it may only mean a call to prayer—the 'hours' of Lamaism are unending—but as the moaning note persists softly and steadily, a vivid speck of flame stabs the darkness across the river. A second later the report of the gun accompanies a prolonged 'the-e-es' overhead."

From the earliest times the conch has also been used in India to call the people to their sacrifices and other religious rites and as an instrument of invocation to call the attention of the gods to the ceremonies to be performed.

With this intimate association with the chief religious rites, the people gradually came to reverence the instrument itself, and to adore and invoke it (see p. 133 for details) as is also done with regard to many other instruments or articles of sacrifice in Hindu rites at the present day; these latter do not, however, appeal in equal measure to the religious feelings of the multitude, for around them have not been woven the myths and legends pertaining to the chank.

In the ceremonies attending the coronation of great kings the chank naturally played a great part. At the time when the Mahabharata was put into its present form, this custom was fully developed to judge from the description of the coronation of King Yudhistira given in the Shantiparwa of that epic. To quote from an interesting summary by Rao Sahib P. B. Joshi * "Kings of different countries, learned Brahmans and sages were invited for the ceremony. A *Vedi* or sacrificial altar was prepared. There were brought *Samidhas* or pieces of sacred wood, five kinds of sacred leaves, waters of the

* The *Times of India Illustrated Weekly*, 20th September 1911.

holy rivers and of the four seas, seven kinds of holy earth, the sacred conch shell, a white umbrella, and white *Chamars*. The horses and elephants used in connection with the coronation ceremony were also white. Yudhistir was then made to sit on a throne of gold, and other members of the royal family sat on seats made of ivory, and close by sat the king's spiritual guide and other sages. The king was now requested to touch such auspicious articles as corn, white flowers, swastika, gold, silver and jewels. The king's ministers and other high functionaries were now brought before him by the royal priest and they all paid their homage to their sovereign. The sacred fire was then kindled, the king and queen sat in front of the holy fire on seats covered over with tiger's skin, and made offerings to the fire. Shri Krishna then got up, took in his hand the sacred conch-shell, which was filled with holy water, sprinkled the water over the heads of the king and queen and said: "I sprinkle this holy water over you to indicate that from this day you have become the paramount sovereign of Bharat Varsha." At this time *dhundubi* and other musical instruments were sounded, drums were beaten, the king's bards sang the praise of the king and wished him victory and long life."

In Bengal every marriage conducted according to Hindu ceremonial, includes the placing of chank-bangles, lacquered red, upon the bride's wrists. An iron bangle placed on the left wrist is also essential to the ceremony. Elsewhere this particular marriage custom is scarcely ever practised, but sufficient instances are recorded among a few widely scattered castes and caste-sections of the existence of a similar marriage custom elsewhere to tempt us to believe that at one time it was the general custom of all fully Hinduised castes throughout India. Finds of fragments of chank-bangles in places where the use of these ornaments is non-existent at the present day strengthen the theory. Legendary lore can also be quoted in support. For instance, among the Balijas of Telugu districts, who there constitute the chief trading caste, a legend is current (Thurston, I, p. 137) that "on one occasion Siva wanted his consort Parvati to appear before him in all her glory. But, when she stood before

him, fully decorated, he laughed and said that she was not as charming as she might be. On this, she prayed that Siva would help her to become so. From his braid of hair Siva created a being who descended on the earth, bearing a number of bangles and turmeric paste, with which Parvati adorned herself. Siva, being greatly pleased with her appearance, told her to look at herself in a looking-glass. The being who brought the bangles, is believed to have been the ancestor of the Gāzula Balijas."

The latter sub-division of the Balijas peddle glass bangles only at the present day, but it is reasonable to suppose that before the discovery of glass, their stock in trade consisted instead of chank-bangles. It is indeed probable that the introduction of glass dealt a heavy blow to the employment of the chank-shell in feminine adornment in certain districts, particularly for instance in those where, as in Vizagapatam, glass factories being established, glass bangles were put on sale at a fraction of the cost of comparatively expensive chank ones, which require the expenditure of much time and labour to render them attractive.

Another legend, prevalent among the Sangukatti Idaiyans, the great pastoral or shepherd caste of Tamil India, narrates that when Krishna desired to marry Rukmani, her family insisted on marrying her to Sishupalen. When the wedding was about to take place, Krishna carried off Rukmani and placed a bangle made of chank-shell on her wrist (Thurston, II, p. 354). These particular Idaiyans belong to one of the sections of this caste which to-day require their married women to wear these bangles—now a very rare custom in South India.

Indian sources give the barest indications of the traffic in chank-shells that must have been brisk for 3,000 years or more between the fisheries in the Gulf of Mannar and on the Kathiawar coast and the inland nations of the Deccan and Hindustan. In another section—that dealing with the chank-bangle industry, proofs are given from archæological sources and from ancient Tamil writings of the great antiquity of this trade and industry. Apart from this evidence we have nothing of importance till we come to the sixth century

when the travelled monk, Cosmas Indico-Pleustes, after mentioning the island of Ceylon, proceeds to say "and then again *on the continent* and further back is Marallo which exports conch shells (κοχλιους)." Sir J. Emerson Tennent in his "Sketches of the Natural History of Ceylon" (London, 1861) misses the significance of the expression "on the continent" and identifies Marallo with Mantotte near Mannar on the north-west coast of Ceylon, where chanks are collected in the neighbourhood in large quantities even at the present day. Yule * with closer adherence to the old text would place this ancient chank-fishery on the Indian coast (*i.e.*, on the continent opposite Ceylon), and he suggests that Marallo is a corrupted form or misrendering of Marawar, the name of the chief caste living in the coastal district of Rāmnād, now the location of one of the most productive and accessible present day chank-fisheries. The name of the local people not infrequently was applied by old travellers to the chief town in their territory and so, very reasonably, we may identify Marallo generally with the Maravan coast and particularly with either the town of Rameswaram or of Pamban situated at the western extremity of Adam's Bridge and directly opposite to Mantotte and Mannar at the western extremity.

Ma'bar or Maabar, the Arab name for the western coast of the Pandiyan country, has probably a parallel derivation, Maabar being indeed a very fair rendering by gutteral Arab lips of the Tamil term Maravar.

The next writer to mention the chank is the Arab Abouzeyd, who in 851 A.D. stated that "they find on the shores of Ceylon the pearl and the shank, which serves for a trumpet and which is much sought after."†

A long gap occurs in references by travellers to chank-fisheries till the days of the Portuguese and Dutch when they become fairly frequent. A few years before the establishment of the former power in the Gulf of Mannar, the traveller Barbosa visited the old town of Kayal, and from him we learn that it was then still an important seaport where many ships from Malabar, Coromandel

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* "Cathay and the Way Thither," Vol. I, p. clxxviii, London, 1866.
† *Fide* Yule's "Hobson-Jobson."

and Bengal resorted every year to trade with the rich Hindu and Muhammadan merchants living there, a definite statement which shows that there was even then no difficulty in forwarding supplies of chanks direct by sea to the Dacca workshops.

Barbosa also tells us that at the time of his visit the fishery off this coast belonged to the king of Koulam (Quilon in the southern part of Travancore) who generally resided at Kayal and who farmed the pearl-fishery to a wealthy Muhammadan.* The chank-fishery so far as we know has always been an adjunct to the more romantic pearl-fishery and must almost certainly have been treated in a similar manner, both fisheries being considered everywhere in India from immemorial times as prerogatives of the sovereign. About 1524, the Portuguese seized the Tinnevelly pearl-fishery, stationing a factor and guard boats on this coast—the Pescaria or fishery coast as it soon became termed. In 1563, Garcia da Orta speaks of the trade with Bengal having declined owing to the unrest caused by Muhammadan invaders in that country, but in 1644, Boccaro in a detailed report upon the Portuguese ports and settlements in India records that a large quantity of chanks fished off Tuticorin were exported to Bengal "where the blacks make of them bracelets for the arm." He adds rather quaintly the name of another Tuticorin production—"the biggest and best fowls in all these eastern parts."† Exactly how the Portuguese conducted this trade and what profits it yielded them are not known to me; the Dutch, so far as they were able, destroyed the Portuguese archives in Tuticorin as well as in Ceylon, and we must await further research among the records at Lisbon before we can gain any further information.

The Dutch, keen to distinguish the substance from the shadow, paid great attention to the development of the chank-fishery as distinguished from the pearl-fishery whereof one of their most able local Governors, Baron Van Imhoff, once queried (1740) whether the latter "is not more glitter than gold as so many things are which

* *Fide* Yule's "Hobson-Jobson," article "Chank."

† *Fide* Yule, "The Book of Ser Marco Polo," Vol. II, p. 307, London, 1871.

belong to the Company, which shine uncommonly but have no real substance."*

In 1700, Father Martin, a Jesuit Missionary, wrote (*Lettres Edifiantes*, II, p. 278, edition of 1843), "It is scarcely credible how jealous the Dutch are of this commerce. It is death to a native to sell them to any one but the servants of the Company. The shells are bought by the Dutch for a trifle, and then despatched to Bengal, where they are sold at great profit. These shells, which are round and hollow, are sawn and fashioned into bracelets equalling the most brilliant ivory in lustre. Those fished on this coast (Tinnevelly) are extraordinarily abundant; they have their spiral from right to left, but if one be found twisted in the other direction, it is a treasure valued by Hindus at an extravagant price, for they believe that it was in a chank of this description that one of their gods hid himself in order to escape the fury of enemies pursuing him in the sea."

With the transfer to the British of all Dutch ports on the Coromandel coast and in Ceylon together with the acquirement of the Tanjore and Carnatic territories about the same time, the control of all the chank fisheries in these localities passed to the British. Particulars of their history during the present century are given in section I of this report, under the respective territorial heads.

As many of the chank-beds are situated more than three miles seaward of the coast it is a matter of importance to note that the High Court of Madras, in a case brought by the Raja of Ramnad who in reality must be taken as representing the Madras Government, by whose favour he enjoys the rights to the fishery under the settlement of 1803, have decided that no restricted territorial limit exists either in Palk Bay or the Gulf of Mannar and that chank beds wherever they exist off the British Indian coast of the Madras Presidency are vested in the Government of Madras by right of immemorial custom and of prescriptive sovereign right, the Madras Government having acquired by treaty these sovereign rights among other royal prerogatives from the Nawab of the Carnatic, the Rajas of Tanjore and Ramnad and

* Hornell, "Report to the Government of Madras on the Indian Pearl Fisheries in the Gulf of Mannar," Madras, 1905.

the Dutch Government. Further particulars of this important decision are given on page 33.

(2(PRESENT DAY USES.

(*a*) IN RELIGIOUS CEREMONIAL (INCLUDING MARRIAGE AND DEATH RITES), AND VULGAR SUPERSTITION.

We have already seen that the chank is one of the two most important symbols—the other being the wheel or chakram—associated by Hindus with Vishnu, the second person in the Brahmanic trinity or Trimurthi. The majority of the avatars or incarnations of Vishnu are also occasionally represented as holding a chank in the hand : Matsya in the form of a fish, Kurma the tortoise, Varaha the boar, and Narsingha the man-lion, are avatars sometimes sculptured holding Vishnu's chank : more frequently Krishna is thus depicted. Narayana, the god dwelling in the sun, another form of Vishnu, is similarly represented in human form with a chank in one hand and a discus (chakram) in the other. In rare instances Siva is also depicted as holding a chank in one hand as in an engraving by Jaganatha Ananta in a Sanskrit edition of the Dharmasindhu (Annales du Musee Guimet, Vol. VII, 1884). In all these instances the chank represented is of the sinistral or left-handed form, a rarity so choice and valuable as to be worthy to form an adornment of a god. No more fitting gift to a deity can be imagined ; as the symbol of the god who divides with Siva the worship of the Hindu world, as a production of nature so scarce as not to appear once in several millions of normally shaped shells and as an emblem of purity, could Hindu find more fitting offering at the shrine of his god? Thus it is that the pious wealthy have from time to time dedicated these shells to favourite temples—particularly to those that are in high esteem at centres of Hindu pilgrimage. The sacred land of Kathiawar, associated with the later life of Krishna, is an instance in point; while in Bét in 1905, I found richly ornamented sinistral chanks in the Shank Narayan, Lakshmi and Satya Bhamaji temples. (Plates I and XV.) That in the last named is a particularly large and handsome shell, probably the finest sinistral chank in existence, and consequently an almost priceless treasure. The shell

possessed by the Shank Narayan temple is a small elongated specimen offered at the shrine some twenty years ago by a Bhatia from Zanzibar; that of the Lakshmi temple is a short broad one of small size with handsome arabesque ornamentation on the mounting—it has been in the possession of the temple since Samvat 1890 (A.D. 1833). At Benares, temple treasures include similar examples, while in the south of India, where opportunities to obtain these shells are greater, many of the fine temples which form the architectural jewels of that devout land possess one or more. The chief temples at Rameswaram, Chidambaram and Madura may be instanced.

It is remarkable also and indicative that this custom has not originated with modern Hinduism, that sinistral chanks are objects of adoration among northern Buddhists. Sarat Chandra Das, the intrepid survey officer who spent some perilous years in Thibet, mentions ("Journey to Lhasa," London, 1902), that in the Sakya monastery lying to the south-west of Shigatze, there is preserved in the temple a chank of this rare form. Its history is invested with more than ordinary interest, for the monastic records state that it was a present from Kublai Khan, the great Tartar conqueror of China and patron of the Polos, to Phagpa, a hierarch of Sakya, whom Kublai made ruler of Thibet in the second half of the thirteenth century. Sarat Chandra Das mentions that this famous shell is blown by the lamas only when the request is accompanied by a present of seven ounces of silver, but to have it blown "is held to be an act of great merit."

In Thibet these left-handed chanks are called *Ya chyil dung-kar* and in Chinese *Yu hsuan pai-lei.* The people of both countries consider such shells as treasures of inestimable value. In 1867, one was known to be kept at Fuchu by the Ti-tuh (Peking Gazette, February 23rd, 1867) and one at Lhassa ("Journey to Lhasa," *ut supra*, p. 242, footnote).

At one time the value of these shells is said to have been assessed at their weight in gold and this statement is probably correct. To-day they are less valuable and small and imperfect ones occasionally change hands in the north of Ceylon at Rs. 60 to Rs. 90 each (say £4 to £6); such shells are usually sub-fossil ones found

buried in deep mud. Large good-conditioned sinistral shells, obtained alive and therefore of good colour, still command high rates—anything from Rs. 400 to Rs. 5,000 or more, so infrequently are they found.

The method of estimating the approximate value of these latter shells is as follows:—If the shell be of 100 rupees' weight or over (one standard rupee coin weighs exactly one tola, $2\frac{1}{2}$ tolas = one ounce) the value is calculated at the rate of Rs. 50 per tola or rupee's weight; thus a shell of 110 rupees' weight would be estimated according to this method at Rs. 5,500. When the weight is between 30 and 100 tolas then the rate per tola may be taken at Rs. 30 to 40 per tola according to size and quality; a 50 tola weight shell would be worth from Rs. 1,500 to Rs. 2,000. If of 25 tolas weight, the rate may vary from Rs. 5 to Rs. 20 per tola.

Wealthy Hindu Rajas and Zamindars also aspire to possess these sacrosanct shells, the orthodox in order that they may use them to perform *abeyshekam* * in their family shrine and others for the ostentatious pride of possession and because of the superstition generally current which accounts the ownership of a Valampuri chank as conferring prosperity upon the household where it resides. I know also a wealthy Muhammadan Marakayar who has refused offers of several hundreds of rupees for one of these shells; to him the shell is a mascot, the bringer of good luck.

Among the ignorant who usually have never even seen a Valampuri chank, the belief is prevalent in Tamil South India that it blows of its own accord during the night; even the Roman Catholic chank divers of Tuticorin entertain this quaint superstition, and say that the shell is specially clamorous on Tuesday and Friday nights! A yogi when controlling or retaining his breath is also credited with hearing the sound of a Valampuri chank blowing within his abdomen though why the rumbling should be that of a Valampuri and not of an ordinary chank is hard to answer.

Worship of the chank as one of the three essential articles used in domestic worship among Brahmans should occupy an important part in the daily liturgy of

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* The worship of the gods with libations.

this priestly caste and in the Brahma Karma, the work which sets forth in minute detail the order and phrasing of the sacred rites of the Brahmans, the prayer to the sacred chank may be translated as follows :—

Taking the chank in his hand the Brahman recites: "At the mouth of this shell is the God of the Moon, on its side is Varuna, on its back Prajāpati, and on its apex, the Ganges, the Sarasvati, and all the other sacred rivers of the three worlds in which they make ablutions according to the command of Vāsudeva.* In this chank is the chief of the Brahmans (Brahmendra or Brahmanaspati). This is why we must worship the sacred chank. Glory to thee, sacred shell, blessed by all the gods, born in the sea, and formerly held by Vishnu in his hand. We adore the sacred chank and meditate upon it. May we be filled with joy!

"I offer (to the chank) everything needful for worship—perfumes, rice and flowers."

Here they make the sign of the chank, but Bourquin (Annales du Musée Guimet, Vol. VII., p. 45), from whom I quote, says he was never able to discover the manner of making this sign and I have had a like ill-success.

While the above is a portion of the liturgy which the head of each Brahman family is theoretically bound to recite daily, under present day conditions, this is impossible and in fact it is only on specially important puja or holy days that even a greatly curtailed version of this and the accompanying prayers is recited by the head of the family, and this too only in thoroughly orthodox families. The curtailed prayer usually runs "Oh, chank shell, thou wast produced in the sea and art held by Vishnu in his hand. Thou art worshipped by all the gods. Receive my homage."

In this connection an interesting chank legend centres round the temple tank in Tirukalikundram, a holy Saivite village in the Chingleput District, some 37 miles southward of Madras. The village munsiff, Mr. T. A. Vedachala Gurukkal, to whom I am indebted for the following particulars, states that once every twelve years a chank rises to the surface of the large sacred bathing tank called Sanku Theertham. Three days before this

* One of the names of Krishna.

marvellous occurrence, the water in the tank is greatly agitated, foaming and boiling to the accompaniment of considerable noise. On the appearance of the chank the foam subsides and the sound ceases. Then the chank comes to the side where it is picked up, purified and holy water sprinkled upon it. Thus consecrated it is carried in solemn procession through the village to the Vethagiriswarar temple, where it is placed in the treasury with the rest of the temple treasures.

Locally this chank is considered superior to all other chanks in the world and the origin of the periodic miracle is narrated as follows :—

When the sage Mārkkandēya was visiting the sacred places with his disciple, the latter forgot to bring the Siva puja-box containing the chank required for the libation necessary in the ritual of worship. The sage took his bath in the tank and as puja time was fast approaching he prayed to be helped in this misfortune. As a result of his prayer and by the special grace of the deity, a chank appeared in the tank. Then he placed a Lingam before him and, with the help of the chank miraculously provided, performed his worship in an acceptable and proper manner. He also prayed that a chank might appear each day he should worship at this tank. The Puranas say that this request was granted and has been since continued until the present day. In this connection my informant remarks that it is to be noted that twelve ordinary years constitute one divine day.

Thousands of pilgrims resort to the Tirukalikundram shrines each year and the marvel of this story is one of the great assets of the place just as is the periodic liquefaction of blood to the shrine of San Gennario in Naples.

In temple worship, the chank fulfils important service. The ordinary and sinistral forms are both employed whenever the temple possesses them. The former is used in the menial duty of summoning the god's attention, announcing the commencement of the principal rites as well as in calling the devout to worship; such are among the general explanations given for its employment, but some ethnologists hold that the innate and primitive significance of the use of the

blowing chank in temple worship is to scare away hostile and evil-working spirits. This is a reasonable belief as there is little or no doubt that the chank was used originally as a horn or trumpet by tribes holding animistic beliefs prior to the development of the Brahman religion which appears to have adopted the use of the chank in religious ceremonies together with many other rites from the devil-fearing tribes who gradually came into the fold of the new and higher religious belief.

In this connection should be mentioned the custom which prevails largely in Bengal of keeping blowing chanks in the houses of the better class people for use in family worship. Mr. A. R. Banerji, I.C.S., the present Dewan of Cochin State, informs me that it is a general custom in Bengal to turn out with these shells during eclipses and earthquakes and to keep up a continuous blowing till the eclipse or earthquake be over.

A rather striking effect is produced when the chank is used in temple ritual as a sort of rhythmical accompaniment, when it plays the part of kannagōlu or tālavinyāsa.*

In Hindu temples the four daily services take place before dawn, at noon, at sunset, and at 9 or 10 P.M. At these times the Ochchans, the caste entrusted solely in the Tamil country with the duty of chank-blowing in temples, announce the commencement of each service and punctuate the various rites with the drone of their shell according to the customary ritual. Among the Uriyas the corresponding caste of temple servants is that of the Rāvulos, whose caste duty is to sound the chank during services in Saivite temples when the god is being taken in procession as also to prepare garlands of flowers for the adornment of the god. Like the Ochchans, they are not usually whole-time servants of the temple, but while the former earn money as musicians at weddings, performing upon a long silver trumpet, the Rāvulos make and sell garlands to the laity. The Ochchans never use the chank except in the temples, whereas the Rāvulos are employed to sound it at Brahmans' weddings. It is a rule among the latter that they must possess at least two blowing chanks, lest,

* Day, "Music and musical instruments of S. India and the Deccan", 1891.

losing one, the temple service should suffer in consequence.

In Bengal, the Ramavat sect of Vaishnavas pay particular attention to the call of the chank. By them all forms of worship, except the unceasing repetition of the name Rama or Hari are deemed useless, but in every ākhāra or monastery of the sect an idol is tended at regular hours to the sound of chank shells and gongs, while offerings of flowers and fruit are presented by the laity (Risley, II., 340).

Chanks to be used as wind instruments are chosen of as large size as procurable, often 8 inches long by 4 inches in diameter. The only preparation they require is to have the extreme apex removed, usually by hammering. No tune properly so called can be played, but the tone is capable of much modulation by the lips and the long drawn notes as they drone clear and mellow on the evening breeze have a haunting charm that clings sweet and seductive in the memory; it has a mystic wail perfect in appropriateness to its religious use before the shrines of the gods of a profoundly philosophical creed.

Sinistral shells whenever possessed by a temple, are usually mounted in handsomely decorated golden settings and used as libation vessels in the service of the god. Whether the god be Siva in the form of a lingam, or Vishnu or other deity represented in anthropomorphic shape, the officiating priests must lave it with water rendered sacred by being poured from the mouth of a chank.* On certain auspicious days cow's milk is used for libations in lieu of water. And if the doubly sacred sinistral chank is not possessed by the temple, then a choice example of the ordinary form must be used.

In family devotions the chank is also employed as a libation vessel by strictly devout Brahmans, both Saivites and Vaishnavites. Daily before the mid-day meal the Brahman head of the family, after taking his bath, prostrates himself before the family shrine and then chanting some hymns from the Vedas, he pours water over the image of the deity from the mouth of a chank-shell. Then he dresses the god and commences his prayers.

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* A Tamil proverb says :—" If you pour water into a chank, it becomes holy water; if you pour it into a pot, it remains merely water."

In Thibet the call of the chank is amongst the most familiar sounds to be heard in the monasteries and temples of the Lamaistic faith. The writings of travellers in that most priest-ridden of countries, contain frequent mention of the custom. Sven Hedin, for example, when describing the opening ceremonies of the Losar or new year festival which he saw in the great monastery of Tashilunpo in Shigatse—the seat of the Tashi Lama, says:—"Suddenly from the uppermost platforms on the roof ring out deep, long-drawn-out blasts of horns over the country; a couple of monks show themselves against the sky; they blow on singular sea-shells, producing a penetrating sound, which is echoed back in shrill and yet heavy tones from the fissured rocks behind the convent; they summon the Gelugpa, the brotherhood of yellow monks, to the festival."

Tea-drinking among the Lamas must never be missed; the monks partake of it even in the midst of the most important ceremonies, and to prevent the terrible misfortune of a brother being too late for any distribution of tea, the departure of the novices from the kitchen bearing their loads of hot tea in large copper vessels on their shoulders, is signalled to all in the various halls and cells by a loud call upon a chank-horn from the temple roof.

Sven Hedin also describes ("Trans-Himalaya," Vol. II, p. 19) a cave inhabited by a hermit reputed to be one hundred years old, who passed his days crouching in a niche in the wall continually saying his prayers and occasionally blowing a faint blast on a chank.

And when a monk, no longer able to answer the shell's call to gather with his brethren round the teapots and the bowls of tsamba, passes quietly away, the same sound summons those who remain to attend his funeral mass.

In the purer Buddhism of Ceylon the chank cult also finds place, and figures prominently among the musical instruments employed to lend eclat to the periodic procession (*perahera*) of the tooth-relic at Kandy.

(*b*) Branding.

All Sri Vaishnavite Brahmans, irrespective of profession, are expected to undergo a ceremony of initiation

into Vaishnavism after the Upanayanam ceremony or investment with the sacred thread, in the belief that it is the duty of all of their creed to carry throughout life a memorial of their god upon their person. To effect this, resort is had to branding with heated copper seals made in the conventional form of the various symbols of Vishnu.

Members of this sect are not compelled to undergo this ordeal more than once during their lifetime, but the Madhva sect which comprises chiefly Canarese-speaking Brahmans, have to submit to it as often as they visit their Guru. Men of other castes who become followers of a Vaishnava or a Madhva Achārya (Guru) are expected to present themselves before the Guru for the purpose of being branded. But the ceremony is optional and not compulsory as in the case of a Brahman. Even the women in Vaishnavite families must submit to this branding; in their case it takes place after marriage in the case of Sri Vaishnavites, while among the Madhvas one form of branding should be performed at any age before marriage should the Guru visit the neighbourhood, and a more formal one again after marriage. Regarding Sri Vaishnavites, Thurston (I., 370) states that "the disciples after a purificatory bath and worship of their gods, proceed to the residence of the Achārya, or to the mutt where they are initiated into their religion, and branded with the chakra on the right shoulder and with the chank on the left. The initiation consists in imparting to the disciple, in a very low tone, the Mūla Mantram, the word Nāmonarā-yanāya, the sacred syllable Ōm, and a few mantrams from the Brahma Rahasyam (Secrets about God). A person who has not been initiated thus is regarded as unfit to take part in the ceremonies which have to be performed by Brahmans. Even close relations, if orthodox, will refuse to take food prepared or touched by the uninitiated."

As Vaishnavite Gurus are few in number, it is necessary for them to peregrinate the country, halting at suitable centres to brand those of their followers living in the neighbourhood just as a Bishop in certain Christian churches tours his diocese to afford confirmation (*i.e.*, initiation) services at periodical intervals. In

populous districts where Vaishnavites are in numerical strength the scene at each of the Guru's halting places is intense with interest. Thousands of his disciples gather round eager to be branded. Brahmans are there in force, but men of many other castes and even Paraiyans are there. The ceremonies begin by the making of a fire in a mud pot (*homa kunda*), accompanied by the chant of hymns and the offering of prayer to Vishnu. As Brahmans present themselves for the rite the Guru lifts the copper brands which have been heating meanwhile in the fire and applies them to the shoulders of the people, the chakra on the right, the chank on the left. As each stamp is made the Guru's assistant, usually a Dasari or Vaishnavite mendicant, smears the burnt spots with a paste of *namakkatti*, the same white clay used by Vaishnavites when painting the *namam* or sect mark (improperly called caste mark) on their forehead.

Paraiyans and low caste disciples may not be branded directly by the Guru; in their case he heats the instruments and hands them to the Dasari, his assistant, who performs the actual operation.

With regard to the branding customs of Madhva Vaishnavites, who believe that to carry a lasting outward and visible sign of their deity on their body helps them to obtain salvation through him, Thurston (I., 371-373) supplies an interesting account:—"Madhvas have four mutts to which they repair for the branding ceremony, viz., Vayasaraya, Sumathendra, and Mulabagal in Mysore, and Uttaraja in South Canara. The followers of the Uttaraja mutt are branded in five places in the case of adult males, and boys after the thread investiture. The situations and emblems selected are the chakra on the right upper arm, right side of the chest, and above the navel; the chank on the left shoulder and left side of the chest. Women, and girls after marriage, are branded with the chakra on the right forearm, and the chank on the left. In the case of widows, the marks are impressed on the shoulders as in the case of males. The disciples of the three other mutts are generally branded with the chakra on the right upper arm, and chank on the left. As the branding is supposed to remove sins committed during the

interval, they get it done every time they see their Guru. There is with Madhvas no restriction as to the age at which the ceremony should be performed. Even a new-born babe, after the pollution period of ten days, must receive the mark of the chakra, if the Guru should turn up. Boys before the upanayanam, and girls before marriage, are branded with the chakra on the abdomen just above the navel. The copper or brass branding instruments (mudras) are not heated to a very high temperature, but sufficient to singe the skin, and leave a deep black mark in the case of adults, and a light mark in that of young people and babies. In some cases, disciples, who are afraid of being hurt, bribe the person who heats the instruments; but, as a rule, the Guru regulates the temperature so as to suit the individual. If, for example, the disciple is a strong, well-built man, the instruments are well heated, and, if he is a weakling, they are allowed to cool somewhat before their application. If the operator has to deal with babies, he presses the instrument against a wet rag before applying it to the infant's skin. Some Matathipathis (head priests of the mutt) are, it is said, inclined to be vindictive, and to make a very hot application of the instruments if the disciple has not paid the fee (gurukānika) to his satisfaction. The fee is not fixed in the case of Sri Vaishnavas, whereas Madhvas are expected to pay from one to three months' income for being branded. Failure to pay is punished with ex-communication on some pretext or other. The area of skin branded generally peels oft within a week, leaving a pale mark of the mudra, which either disappears in a few months, or persists throughout life. Madhvas should stamp mudras with gopi paste * daily on various parts of the body. The names of these mudras are chakra, chank or sankha, gātha (the weapon of war used by Bhima, one of the Pāndavas), padma (lotus), and Narāyana. The chakra is stamped thrice on the abdomen above the navel, twice on the right flank, twice on the right side of the chest above the nipple, twice on the right arm, once on the right temple, once on

* Properly *gopi chandiram*, a paste made of white kaolin mixed with sandalwood.

the left side of the chest, and once on the left arm. The chank is stamped twice on the right side of the chest, in two places on the left arm, and once on the left temple. The gātha is stamped in two places on the right arm, twice on the chest, and in one spot on the forehead. The padma is stamped twice on the left arm, and twice on the left side of the chest. Narāyana is stamped on all places where other mudra marks have been made. Sometimes it is difficult to put on all the marks after the daily morning bath. In such cases, a single mudra mark, containing all the five mudras, is made to suffice. Some regard the chakra mudra as sufficient on occasions of emergency."

So far as I can learn the branding instruments which are employed to sear the two chief symbols, chank and chakra, by means of heat are usually made of copper. In other localities brands of different metals appear to be used as Risley (II, 339) states that the Rāmānuja, a Vaishnavite sect in Bengal, when undergoing the initiatory rite (*tapta-mudra*) are branded with the chakra on the right shoulder and the chank on the left, by means of a brand made of eight metals (ashta-dhatū) gold, silver, copper, brass, tin, lead, iron, and zinc.

Various deviations from the standard ceremonial exist in certain districts; among these is that followed by the Bedar or Boya caste of the Southern Deccan, a caste which largely constituted the old fighting stock of this district. Among them the men are branded on the shoulders by the priest of a Hanuman shrine with the sign of the chank and of the chakra, in the belief that this will enable them to go to swarga (heaven). Female Bedars who are branded become Basavis (temple women) and are dedicated to a male deity and called Gandu Basavis or male Basavis (Thurston, I., 194).

This branding of temple-girls, or Dēva-dāsi as they are termed in the Tamil country, with symbols of the chank and chakra is always an essential feature in the ceremonies which mark their dedication to the god of their temple, whom thenceforward they serve with dance and song.

Allied to branding is tattooing. The Tandans of Malabar, a caste about the level of the Tiyyans, adopt this method to show devotion to the deity, and among

the religious symbols worked into the skin of their arms is that of the chank (Thurston, VII., 10).

(c) The mendicant's conch.

Beggars throughout India occasionally use the chank shell as a musical instrument, and with certain castes of religious mendicants it is an essential part of their professional paraphernalia, so much so that a Tamil proverb likens things in continual association to "the breech of the chank and the mouth of the mendicant."

The Dasari, who belongs to a caste of Vaishnavite mendicants well represented in the Madras Presidency, is often seen in North Arcot and the Southern Deccan, announcing his arrival in a village by blasts on the chank-shell which in that part of the country is one of his five insignia. In Telugu districts the Dasaris are more secular and less religious, and the caste is known as Sanku Dāsari or vulgarly Sanku jadi, the chank-blowing caste.

A mendicant's conch sometimes has the apical orifice mounted in brass; temple conchs are usually without any ornamentation, but the Udipi temple owns one very handsomely mounted in brass and this is sounded whenever the god (Krishna) is carried in procession in the temple car (Pl. XVII., fig. 1).

(d) Dedication of temples and houses.

Wherever a new temple is built, or when a new shrine or god is established and added to the number already there, its dedicatory ceremonies include as one of the most important a special libation to the god from the mouths of 108 chanks, or better still, from 1,008 chanks if so many can be afforded, filled with water and flowers.

The building of an ordinary house in the Tamil country must also have its ceremonial dedication at the time the foundation trenches are dug, though among low caste people the rite consists merely of a superstitious act to ensure good luck or to baulk the evil eye. It is carried out with the help of the sacred chank which thus is seen to touch the lives of the people at every point from the cradle to the grave. Before a single stone in the foundation is laid, the ceremony is carried out on a day carefully chosen as being highly auspicious. A

chank is then buried beneath the first stone laid. An old reference to this occurs in a petition quoted by Wheeler (*fide* Thurston, III., 147) from two natives of Madras, in connection with the founding of a village called Chintadrepettah, now a populous division of Madras City. The entry runs:—"Expended towards digging a foundation where chanks were buried with accustomary ceremonies." Roman Catholic converts from low castes follow this custom, as well as Hindus; in Tuticorin, if a Roman Catholic Parayan desires to build a house, the carpenter employed by him chooses an auspicious day by reference to a native calendar, a chank is bought in the bazaar and on the day chosen, having dug a foundation trench and prepared at the bottom a bed of coral stone and mortar, the chank is laid thereon. In the cavity of the shell small fragments of five metals (panjalokam), gold, silver, copper, iron and lead, are placed, turmeric and sandalwood water is sprinkled over, and then the whole is hidden under a mass of sweet-smelling flowers. The ceremony is ended; the first stone may now be lowered into place upon the chank and its contents, and good luck is believed to be assured to him who will inhabit the house.

It may, however, happen that in spite of every precaution, an inauspicious site appears to have been chosen as shown by a sequence of misfortunes happening to the householder. In such cases Hindus may perform a special ceremony called Chankusthabanam to remedy the evil. A chank-shell is filled with water and incantations made for forty-five days. At the end of this period of propitiation, the chank is buried under the house wall. (Winslow, Tamil and English Dictionary, p. 390, Madras 1862.)

Among the Parawa caste living in Tuticorin and other coast towns and villages in Tinnevelly and Rāmnād, misfortune is often sought to be averted from the individual by almost completely burying a chank shell in the floor of the hall (*kūdam*), about two feet on the inner side of the doorway to the street. A small portion of the back of the shell shows as a patch of white on the surface of the floor. The explanation of the custom current among Parawas is that the shell is so placed that when an inmate leaves the house, he must

pass over it, usually touching it, and this will prevent misfortune happening to him.

(*e*) Harvest rites.

In Malabar, at the ceremony called *Nira*, the bringing in of the first fruits, on the morning of the ceremony the priest comes forth from the local temple, preceded by a man blowing a conch. This is the signal for the whole village, and every household then sends out a male member, duly purified by a bath and copiously smeared with ashes, to the fields to gather some ears of paddy. (Logan, Manual of Malabar, Madras, 1887).

Similarly in Siam, the commencement of the ploughing season is associated with religious ceremonies to the accompaniment of conch music. This ploughing festival or *Rek-na* occurs in the sixth month of the Siamese year; the principal figure is the Minister of Agriculture who acts nowadays in place of the King. Surrounded by the symbols of the rank to which he has been exalted, the Minister is borne in a palanquin to the field where the ground is to be broken. A company of yellow-robed priests act as escort, blowing loud blasts on chank shells as they go.

After the consecration of the bullocks to be used, the Minister ploughs part of a field, while ladies of the Royal household sow the ground thus broken up with hallowed paddy.

(*f*) Marriage ceremonies.

The chank has important but variable functions to perform at weddings among all Hindu non-Brahman castes in the districts of the south of India, where this shell is blown by the barber (ambattan) particularly at or immediately after the tying of the *tali* or marriage badge around the bride's neck; the bridal couple usually occupy a raised platform, and round and round this the barber walks while blowing his chank. In Bengal this custom of chank-blowing during weddings is even more general; a common formula which runs

"Ganga ka pani samundra ki sank
Bar kanya jag jag anand"
(May Ganges water and sea-chank betide
Enduring bliss to bridegroom and bride)

is usually recited during the marriage (Risley, II, p. 116) with reference to the blasts on the conch which accompany the ceremonies—the equivalent of the marriage bells in Christian ritual.

In Telugu districts the chank is not used by any caste, non-Brahman as well as Brahman, during weddings, as this is considered inauspicious because chank-blowing is specially associated with funeral ceremonies.

Usually a man of a special caste is engaged to blow the chank at the customary times; in the Tamil country the caste barbers (ambattans) perform this duty; among the Telugus the chank blower is usually a Dasari, among the Uriyas, a Ravulo.

Sometimes, however, women of the family or of the caste perform the chank-blowing duty. Among Bengal Brahmans, for instance, one section of the elaborate and lengthy marriage ceremonies consists of a procession of seven married ladies headed by the bride's mother going round the bridegroom seven times, some sprinkling libations of water and vociferating the hymeneal cry of *ulu-ulu*. One of the seven carries a conch and blows it as she goes (Risley, I, 150). A custom somewhat akin to the above prevails among the Kallan caste of Tanjore, Madura, Trichinopoly and Tinnevelly. On the wedding day the sister of the bridegroom goes to the house of the bride, accompanied by women, some of whom carry flowers, coconuts, paddy, turmeric, milk, ghee, etc. On the way two of these women blow chank shells. (Thurston, III, 80.)

In passing it is interesting to note that a section of this caste, the Puramalai nādu Kallans practise the rite of circumcision probably as a survival of a forgotten forcible conversion to Muhammadanism. The rite is carried out in a grove or plain outside the village and *en route* to the place, and throughout the ceremony a chank is blown at frequent intervals. (Thurston, III, 74.)

It is noteworthy that Brahmans in the Tamil and Telugu districts do not employ the chank during marriage ceremonies though their brethren in Bengal do. Among Telugu Brahmans living in Uriya districts the custom of Bengal used to be followed at marriages, but this is gradually dying out; as one Brahman in Berhampur (Ganjām) remarked "The present day Brahmans

here have more regard for the magic flute than for the divine voice issuing from the chank."

In Bengal the association of the chank with marriage is more intimate and deep than elsewhere; no Bengali lady is properly or legally married unless chank bangles which should be lacquered red be placed upon her wrists. In the Madras Presidency, marriage bangles are used only by a few sections of the agricultural and pastoral castes (Vellalans and Idaiyans).

One of the most interesting facts brought to light during the present research is the weighty evidence we have that in former days the tali, the essential marriage symbol among Tamils, was directly connected with the chank, either composed of a piece of the shell or of a metal ornament in the form of a miniature chank shell. We find this marriage badge named specifically *sankhu tali* among four castes widely separated both geographically and in status and civilization. First are the *Chanku tali Vellalans*, a section of the great Vellalar caste, who wear, according to Winslow (Tamil and English Dictionary, Madras, 1862), a representation of the chank on either side of a central symbol. Unfortunately apart from this reference I have been unable to trace the location of these Vellalans at the present day, or to obtain any details of the custom.

Two other castes with the same marriage badge occur on the West Coast, and it is significant that one is undoubtedly of Tamil origin. This is an immigrant branch of the Idaiyans known locally as Puvandans, settled in Travancore. On ceremonial occasions the women wear the Tamil Idaiyan dress while in ordinary life they attire themselves after the fashion of Nayar women. Their tali is known as *sankhu tali* and a small ornament in the form of a chank is its most conspicuous feature. (Thurston, II, 366.)

The other West Coast caste using a *sankhu tali* is that of the Thandan Pulayans, a small division of the Pulayans who dwell in South Malabar and Cochin. The women dress in a leaf skirt made from the stems of a sedge called *thanda* which are cut into equal lengths, woven at one end and tied round the waist so that they hang down below the knees.

According to Ananthakrishna Ayyar (Thurston, VII, 23) "At the marriage ceremony, the tāli (marriage badge) is made of a piece of a conch shell (*Turbinella rapa*) which is tied on the bride's neck at an auspicious hour. She is taken before her landlord, who gives her some paddy, and all the coconuts on the tree beneath which she happens to kneel. . . . . To ascertain whether a marriage will be a happy one, a conch shell is spun round. If it falls to the north, it predicts good fortune; if to the east or west, the omens are favourable; if to the south, very unfavourable."

Lastly and most interesting of all, we find a caste calling their marriage badge *sankhu tali* which on examination shows no likeness to a chank shell. These are the Parawas of the coast towns on the Indian side of the Gulf of Mannar. When the Portuguese arrived there early in the sixteenth century, these people who were principally pearl fishers, chank divers, and fishermen, were orthodox Hindus, but the stress of Muhammadan competition drove them into alliance with the Portuguese and they went over in a body to the Roman Catholic church. To-day the badge tied around the bride's neck on marriage consists of three ornaments, a central cross flanked on either side by the symbol of the Holy Ghost; nevertheless it is called *sankhu tali* as among the castes first mentioned. There is no doubt that when the caste was a Hindu one the *tali* was true to name, indeed Parawa tradition is definite, for it asserts that originally the central ornament was a small figure of some Hindu God (probably Krishna) flanked by one of a chank shell on each side. The use of the original name is a strange persistence in view of nearly 400 years sojourn within the Christian fold; it is one of the many signs of tolerance shown by the Roman Catholic priesthood towards their converts' prejudices on immaterial points--a tolerance in petty matters that has done much to help that church in its propaganda.

Among some castes, including the Bauris and Dandasis of Ganjām, turmeric water from a chank shell is poured seven times over the hands of bride and bridegroom which are tied together with seven turns of a turmeric-dyed thread. (Thurston, Vols. I and II.)

(σ) DEATH CEREMONIES.

Throughout the Tamil country all non-Brahman castes which observe Hindu rites have the chank sounded as the body is being taken to the funeral pyre or to the burial ground. It is usual also to employ the conch-blower on the last day of the sraddh ceremonies in those castes which follow the orthodox ritual. Among the Telugus these same rites are largely followed, but it is said that Vaishnavites do not observe them. Among both races, the Brahmans do not have the conch blown at any period of the obsequies, – a sign that lends weight to the theory that the chank has been borrowed by Brahmanism from another religion.

In the Madura and Tinnevelly districts the conch-blowers at a funeral are Ambattans or barbers, the same caste as performs likewise at weddings. Among the Idaiyans of these and the neighbouring districts one part of the funeral rites consists in the son perambulating the pyre thrice with a pot of water on his shoulder; at each turn the barber makes a hole in it with a shell when the head of the corpse is reached. Finally the pot is broken near the head. (Thurston, II, 362.)

Further north in the East Coast districts from Tanjore and Salem to the Kistna River, the Panisavans are by caste custom the funeral conch-blowers; they may indeed be accounted the undertaker caste, as it is their duty to carry news of the death to the relations of the deceased. It is they who generally keep all the materials necessary for the funeral including the palanquin required for the conveyance of the corpse to the cremation ground. At the funeral, the Panisavan follows the corpse, blowing his conch. When the son goes round the corpse with a pot of water, the Panisavan accompanies him sounding his conch the while. On the last day of the death ceremonies (Karmandhiram) the Panisavan should also be present and blow his conch especially when the tali is removed from the widow's neck. (Thurston, VI. 56.)

The insignia of the Panisavans are the chank and the tharai, a long straight trumpet.

In Coimbatore district, the duty of sounding the death conch belongs to the members of an important sub-division of Paraiyans, called on this account, Sankhu

Paraiyan (Thurston, VI, 81). In Travancore when a headman or kaikkaran of the Paraiyans settled there happens to die, a chank-shell is buried with the corpse (Thurston, VI, 134.)

The chank sometimes has a place in the death ceremonies of castes which are not Hinduised. Thus among the Cherumans of Malabar and Cochin, a caste of agricultural serfs, according to Mr. Ananthakrishna Ayyar (Thurston, II, 81) "the son or nephew is the chief mourner, who erects a mound of earth on the south side of the hut, and uses it as a place of worship. For seven days, both morning and evening, he prostrates himself before it, and sprinkles the water of a tender coconut on it. On the eighth day, his relatives, friends, the Vallon, and the devil-driver assemble together. The devil-driver turns round and blows his conch, and finds out the position of the ghost, whether it has taken up its abode in the mound, or is kept under restraint by some deity. Should the latter be the case, the ceremony of deliverance has to be performed, after which the spirit is set up as a household deity."

How far the conch is used in funeral rites outside the Madras Presidency, I am not in a position to say, except in regard to Thibet, where as already incidentally mentioned, it is a custom to sound it as the body of a monk or a nun is being conveyed from the place where death occurred.

(*h*) Totems.

Totems as the distinctive signs of exogamous septs must have been at one time universal among tribes of Dravidian origin. To-day a well developed totemistic system characterises the tribal organization of the Santals and Oraons who retain languages distinct from those of the surrounding peoples, know nothing of the caste system, and who continue to worship non-Aryan Gods. Among the Santals 91 septs are known, and one of these is known as Sankh. The members of this sept may not cut, burn, nor use the shell, nor may the women of this sept wear it in personal adornment.

Above these still primitive tribes and between them and the fully Hinduised peoples who are split up into castes, are a large number of partially Hinduised tribes

which in many cases show distinct traces of a totemistic organization. Among these the Kurmis of Bengal, and the nomad Koravas who wander throughout the peninsular part of India, both have an exogamous sept or gotra of which the totem is the chank-shell. Among the Kurmis this sept is called Sankhawar; its members are prohibited from wearing ornaments made from chank-shells. With the Koravas it is termed Samudrāla, signifying the sea, and people of this sept may not use the chank in any way. Higher than these are the Kalinjis, an Uriya agricultural caste, and the Kurubas, a caste of shepherds and weavers widely spread throughout the Madras Presidency. Both castes comprise septs named after the chank, in the case of the Kalinjis Sankho, in that of the Kurubas Sankhu. I am not aware whether the septs among the former caste have now totemistic value, or if it has become merely a name, a gotra name; in any case it may be taken as certain that in the pre-Hinduised condition, the name of the gotra was of real totemistic value. Bhāgo (tiger) and nāgo (cobra) are names of two other gotras of obviously totemistic origin. With the Kurubas, the sept is undoubtedly exogamous and its totemistic character certain.

Another caste or sub-caste showing by the names of its sections a probable totemistic origin is that of the Koppala or Toththala, a sub-division of the Velamas, a caste of agriculturists in the Vizagapatam district. Among their sections are some named Nāga (cobra), Sankha (chank), Tulasi (basil or tulsi) and Tābēlu (tortoise). At the present day these divisions although apparently of totemistic origin, have no significance so far as marriage is concerned. (Thurston, VII, 340.)

(*i*) Evil-eye superstitions.

Belief in the reality of the malign results which ensue from being overlooked by the evil-eye is frequently present in an acute form in the Madras Presidency. It is specially dreaded in the case of houses under construction and in respect to valued cattle. Everywhere in Tamil districts the custom prevails more or less extensively of seeking protection for draft bullocks by tying a small chank-shell upon the forehead of such as are in good condition or in any way specially valuable

or beautiful in their owner's eyes. Of late years the custom has tended to fall into abeyance in certain districts. As is to be expected the people of country villages cling to it with greater tenacity than those in towns. Many, however, decorate their bulls in this way without thought of it as an amulet against evil—to them it is merely an old custom to be followed, or else they put it on their favourite animals as an ornament to mark the pride they have in them. Again, some, from a peculiar shyness often met when discussing such matters with the peasantry, deny that the chank-shell is used as an amulet although in reality it may be so used by them.

In the southern Deccan the custom appears to be falling more quickly into abeyance than in Tamil districts. The Collector of Kurnool informs me that though the practice survives in parts of Dhone, Kumbum, Koilkuntla and Sirvel taluks of tying a chank on the forehead or round the necks of bullocks and ponies, it is gradually dying out; in Bellary the Collector states that it still prevails in Bellary, Hospet and Hadagalli taluks in respect to bullocks, but adds that the people do not now attach any religious or secular significance to it. In Anantapur the Collector states that the custom is not now followed in that district.

In Madras City it is quite common to see it and there also I have seen a shell hung by a chain or a cord round the neck of a cow-buffalo when in milk to prevent her being "overlooked" and her milk thereby dried up prematurely. In country villages this latter custom is not infrequent both in regard to ordinary cows and to cow-buffaloes. In the former case the half of a coconut-shell is often added at either side of the chank-shell. In the Madura, Trichinopoly Salem and adjacent districts a shell is often hung round the necks of jutka and pack ponies, not only by Hindu owners but also by Muhammadans. In Madura specially valued sheep occasionally are similarly guarded from evil, and in the same district I have seen milch-goats protected in a like manner. In all these cases the shells used are of small size, the great majority being dead or sub-fossil shells from the mud-beds of Ceylon. They are the same as are sold as feeding spouts for infants in every Tamil bazaar. A

hole is bored or broken in the back and the rope passed through this and out at the mouth of the shell. The surface is generally roughly engraved in a coarse spiral or scroll pattern.

Used probably for a similar purpose may have been the handsomely engraved large chank shell obtained in an oblong sarcophagus of red pottery found in the prehistoric burial site at Perambair in the south of Chingleput district. The size is much greater than any I have ever seen used to decorate ordinary cattle; no ordinary person owned it we may be certain—probably it decorated the forehead of a bull or possibly of an elephant belonging to a man of great local importance. From the same tombs came three other handsomely decorated chank ornaments, two of which were probably ornaments for the hair (see p. 162 for further particulars).

Nowhere have I ever seen more than a single shell hung round the neck of any animal, but that in ancient times a different habit at least occasionally prevailed is possible, to judge from the string of 16 small chank shells from a barrow near Guntakal junction in the Anantapur district, now to be seen in Madras Museum. All these shells have had the apices broken in and partly rubbed down and each has the thickest part of the body perforated from side to side so permitting them to be strung together. They appear to have formed a necklace but whether they were suspended round the neck of a bull or may be hung like a chain of office round the neck of some person of importance we have no means of determining.

In Malabar the chank is little in evidence, but Logan (Malabar Manual, 1887, vol. I, p. 175) records a belief there prevalent that a cow will stop giving milk unless a shell (not necessarily a chank) is tied conspicuously about her horns and at Tanur, Malabar, I have seen valuable sheep with shells other than chanks hung round the neck.

Further north, in the coast villages of South Canara, south of Mangalore, rings made from Strombus shells but known locally as chank rings are employed by parents to avert the evil eye from their young children. At Kasargod, Bekal and the adjacent villages I have found the custom especially common among the Mukuvans, a caste of immigrant Malayali fishermen. Children

from 3 to 4 years old in these villages are frequently given necklaces made of Strombus rings alternating with elongated glass beads. Some other castes in the same neighbourhood, Mokayans and Tiyyans together with some Mappillas are said to follow the same custom. Usually the rings do not exceed twelve in each necklace. Adults do not wear these amulets as is the habit of the women of certain sections of the Cheruman caste in Malabar (*cf.* p. 158) and of the Hill Vedans of Travancore. How far these and other facts connote former wide or even universal prevalence of this habit among the indigenous population of Malabar, is a line of inquiry likely to repay careful investigation.

Finger rings purporting to be made from chank shells, but usually cut from a small species of *Strombus* common on the western coast of the Gulf of Mannar, are also used very freely throughout the Tamil country and also in Malabar and Cochin, chiefly by non-Brahmans among Hindus, as amulets against evil spirits, the evil eye and certain sicknesses. In Tinnevelly, Madura and Rāmnād the custom is very prevalent among both sexes of non-Brahmans. Labbai and Marakayar Muhammadans in whose veins much Hindu blood is present, also affect the custom. The Vellalans, although like Brahman adults, they wear, except in one section, neither chank-bangles nor rings, often provide their children with chank-rings or else with pieces of chank-shell tied on the wrist of the right hand by means of black thread, as an amulet against the disease called *chedi* which is, I believe, rickets. In some cases the ring or piece of chank is placed on the wrist only when the disease has laid hold of the child, in others it is tied on when the child attains its second month and kept there till it is three years old, when it is believed that all danger of contracting the disease is passed. Among the castes ranking next,—Chettis, Kollans, Thachchans, Thattans, Nayudus, Idayans, and Chaluppans, a chank-ring is often worn as an amulet against pimples on the face: occasionally their young children are provided with small and roughly ornamented chank-bangles to safeguard them against *chedi.* The low castes or Panchamas such as Pallans, Valayans, Paraiyans, etc., are the most regular devotees of these amulets.

The Roman Catholic Parawas of Tuticorin and the other Parawa strongholds on the Pescaria Coast have also been great believers in the virtue of chank amulets, and till recently all babies were given chank-bangles to protect from convulsions and from *chedi.* Even now the poorer and more ignorant continue to employ these amulets, keeping them on the wrists for about three years. The richer and better educated have either abandoned the practice or keep the bangles on for a much abbreviated period. The Parawas formerly also employed pieces of the curious egg-capsule of the chank for the same purpose as the bangle, a fragment of the capsule (*chanku-pu,* literally "chank-flower") being tied by means of thread upon babies' wrists.

In Madura chank amulets are used even more freely than in Tinnevelly. In addition to bangles and rings used as amulets against the evil eye, or ailments such as chedi and pimples, very roughly fashioned and imperfectly rounded fragments of chank-shells are used in the manner of beads to make necklaces which are used as amulets. Maravans, Paraiyans, and Chakkiliyans are among the castes chiefly addicted to the wearing of these and other chank amulets; these people often give their children both chank-bangles and necklaces of chank-beads with a view to multiplying the countervailing influences against the evil eye and against disease.

Chank-bead necklaces (*chanku malai*) are also worn largely by children of the poorer Chettis and of the Vanniyans (oilmongers) who, though they do not generally wear chank-bangles, will wear these chank-bead necklaces. The people of the lower castes also use the same rough beads to make bracelets (*chanku pasi*) worn on the wrists for the same object as the bead necklaces. Similar customs in regard to rings and bead necklaces prevail in Tanjore and in South Arcot, where the low castes, especially Vanniyans, Koravans, Paraiyans, Chakkiliyans and wandering Lambadis, generally wear them as amulets against evil spirits, the evil eye and sickness. Koratti women appear to be the only ones in South Arcot who wear bead bracelets in addition to other bangles according to information kindly supplied by the Collector, Mr. Azizuddin.

The trade in these amulets is of considerable dimensions. Thus the Tahsildar of Chidambaram reports that rings worth about Rs. 500 are sold yearly in his taluk to the residents and to the thousands of devotees who flock to the great temple of Nataraja. The price runs from two pies to one anna per ring— some are very rough untrimmed *Strombus* rings, while the higher priced may be of real chank with a few oblique lines of ornament sawed or filed on the outer surface.

The rough beads used in making necklaces and bracelets look very much like tiny carpal bones ; they sell about eight beads for one pie—a whole necklace may be bought for one anna ; the small bangles worn by babies in Madura and Tinnevelly cost 3 to 5 annas per pair. The latter are made largely in Kilakarai, a large Muhammadan settlement on the Rāmnād coast, near the head of the Gulf of Mannar. The majority are cut chiefly from under-sized shells too small to have any value in the Bengal market. By rights these shells should not be fished ; they should be put back alive by the divers in order to grow to adult dimensions. This precaution is followed as far as circumstances permit in the Tuticorin chank fishery which is conducted departmentally by the Government of Madras ; in the Rāmnād fishery the short-sighted greed of the renter and his employees takes no account of any such precaution for the future prosperity of the fishery.

(*i*) Proverbs.

No language is richer than Tamil in that peculiar form of wisdom which is enshrined in the pithy saws of the common people. Many are very wise indeed and often have a Delphic turn confusing to a simple wit. The works of Jensen * and Lazarus † contain over 10,000 proverbs, mostly current at the present day, and from these two collections ten typical proverbs concerning the chank have been gleaned.

From Jensen we get :—

526. Like blowing a chank in the ear of a deaf man.
செவிடன் காதிலே சங்கு ஊதினாற்போல்.

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* Rev. H. Jensen, *A classified list of Tamil Proverbs, Madras*, 1897.
† *Dictionary of Tamil Proverbs*, Madras.

690. Can you get sound out of a broken chank?
உடைந்த (or ஓட்டை) சங்கில் ஊதை (or காற்று) பறியுமா?

2559. Will the dawn come at the blowing of the chank?
ஊதுகிற சங்கு ஊதினால், விடிகிறபொழுது விடிகிறதா?

(This refers to the blowing of chanks when the temples are opened about 4 A.M.; Rostrand's *Chanteclaire* has the same motive as this proverb.)

3097. The mendicant blew the unused chank and spoilt it.
சும்மா கிடக்கிற சங்கை ஊதிக்கெடுத்தான் ஆண்டி.

(A reference to the contamination wrought by the contact of saliva—a wholesome Hindu rule.)

2065. If a mendicant's son become a mendicant, he will blow the chank at the proper time.
ஆண்டிமகன் ஆண்டியானால், நேரம் அறிந்து சங்கு ஊதுவான்.

(The influence of an hereditary calling is set forth in this saw.)

Lazarus supplies the following, but he confines himself to giving the Tamil and does not supply a translation into English.

4416. சங்கு ஆயிரம்கொண்டு வங்காளம் போனால் பொன்பாளம் வந்தாலும் வந்தது, மண்பாளம் வந்தாலும் வந்தது.

This may be rendered—"If you take 1,000 chanks to Bengal your venture may turn to gold or just as likely to dirt." The reference to taking chanks to Bengal would seem to betoken the ancient character of the traffic in chank shells between the Tamil country and Bengal; it certainly implies clearly the highly speculative nature of the trade; the chanks may fetch a high price or they may prove to be a drug in the market, and so cause much loss to the exporter. The proverb is one used to express the risk or uncertainty of whatever may be in question between the speakers.

4417. சங்கு ஆயிரம் கொண்டு காசிக்குப் போனாலும் தன் பாவம் தன்னோடே.

(If you take 1,000 chanks to Kasi (Benares) yet the sin remains with you.)

This is much less obscure in application than the proverb which precedes it; lavish offerings to the Gods do not wipe away a sin.

4418. சங்கு உடைந்தது மண்கரைந்தது.

This reads literally, " a chank broken ; mud dissolved " signifying the impossibility of mending some happenings.

4419. சங்கு சூத்தும் ஆண்டி வாயும்.

" The chank's breech and the mendicant's mouth ", a saying applied to things in frequent contact or association.

4420. சங்கை சுட்டாலும் தன் வெண்மை குன்றாது.

" Though you burn a chank, its whiteness is not diminished."

Lastly we have:

சங்கில் வார்த்தால் தீர்த்தம், சட்டியில் வார்த்தால் தண்ணீர்

" If you pour (water) into a chank (it becomes) holy water; if you pour (it) into a pot (it is merely) water."

(*k*) For Personal Adornment.

In personal adornment, and apart from any uses it is put to in the form of amulets, the chank-shell is employed principally as the crude material wherefrom beautiful bracelets of many patterns are made for use in Bengal and the adjoining provinces; subsidiary uses to which it is put is to fashion from it finger rings, necklaces, disc ornaments for headdresses and caps, and as a recent addition, coat and dress buttons.

The bangle industry in all phases is treated separately and at full length in Section II, to which the reader is referred for all details.

Rings actually made from chank-shell are not manufactured in any quantity; their place is taken largely by those sawn from a much smaller shell, a species of *Strombus*, found on the Rāmnād coast of the Gulf of Mannar. So far as I can learn, the industry is localized at Kilakarai, a seaport of Rāmnād inhabited largely by Muhammadan (Labbai) fishermen, pearl-fishers and chank-divers. The rings are usually exported with a minimum of finish; only the roughness of the edge is rubbed off and nearly always the chestnut stippling

characteristic of the coloration of the *Strombus* employed, is clearly recognizable. Many are sold in the bazaars or by peddlers throughout the Tamil and Malayalam districts, usually as amulets against the evil eye and against such minor ailments as pimples on the face and various skin troubles. So far as I can ascertain, the only people who use these rings in personal adornment are two tribes of low civilization living in the Malayalam country—the Hill Vedans of Travancore and certain sections of the Cheruman tribe in Cochin and Malabar. The former I have not seen. They are described by Thurston (VI, p. 333) as living in wretched huts and employed chiefly as rice-field watchmen. He states that both the men and women of this tribe wear numerous bead necklaces interstrung or otherwise associated with a few of these rings. In a photograph given by the same authority (Vol. III, p. 177), a man is shown wearing numerous strings of glass beads passed *through* eight Strombus rings. In the case of the women these necklaces hang down as far as the abdomen.

The Cherumans were formerly the agrestic serfs of Malabar, Cochin and Travancore—the Malayalam country or Kerala. To-day they still remain largely in a servile condition, carrying on for their masters the heavy labour of the fields; they receive their pay almost always in kind. They are divided into a considerable number of endogamous sections differing in appellation in different districts—a sign of long-continued residence in a country of difficult intercommunication.

All Cheruman women are greatly addicted to the use of necklaces, particularly of the showy strings of beads now put within the reach of the poorest by the enterprise of Austrian and Italian manufacturers. Of other clothing they wear the scantiest—a very dirty, once white cloth, pendant from the waist, being their usual garb. Certain sections wear as a distinctive badge, in addition to numerous bead necklaces, a long cord whereon are strung large numbers of Strombus rings (*chanku modiram*)—they believe them to be of chank-shell. The bead necklaces are usually wound many times round the neck itself, roughly forming a collar often reaching as high as the chin. The chank necklace is worn at a lower level, and lies on the shoulders and on the upper

part of the breast ; it looks much like a chain of office and is indeed the badge of the tribal sept. At Tanur (Malabar) where after much trouble three Cheruman women were got together for my inspection, one of the husbands had to be paid a day's wages to keep guard over them to prevent their flight. They were all exceedingly shy, and it was with much reluctance that they stood up in front of my camera. As will be seen by reference to pl. XVIII, fig. 1, the chank ring necklaces (*chanku modira mala*) are made up of a very large number of rings not strung but tied by the upper edge to a strong cord in such a way that each ring overlaps its neighbour on one side and is similarly overlapped on the other side by the succeeding ring, much as the rings in chain armour are arranged. From 50 to 100 rings are required to form a full necklace of this pattern ; as each ring costs from 3 to 6 pies in the local bazaar, the total cost may amount to Re. 1-8-0 or Rs. 2, a large sum to these exceedingly poor people. The Cherumans who wear these chank chains in the Tanur neighbourhood say they belong to a sept named Kallādi Cherumans and that they wear them to distinguish themselves from the Paliya and other septs with which they may not intermarry In Tanur bazaar I saw a single example of another pattern of this strange necklace worn by a woman also said to be a Kalladi Cheruman. In this case the number of rings used were comparatively few, 20 in all, and between each pair were strung a couple of glass beads of different colours. Each ring was separated by an interval of about an inch from its neighbour on either side, and instead of being fastened to the common cord by a single loop, it was fastened by two separate loops which enabled it to lie flat upon the skin. The woman shrank against the wall, averting her face and trying to sidle away, and it was with great difficulty she could be persuaded to answer a few particulars. Among other information she gave, was the statement that this necklet is believed to protect from evil spirits.

So far as I have been able to ascertain, these chank necklaces are assumed soon after a girl attains puberty if her parents can afford it. If they be very poor and cannot afford it, then, when her marriage is arranged, it is generally settled that the bridegroom shall provide

the needful ornament. There is no special ceremony followed at the time a girl puts on her chank necklet for the first time. As a rule the men of the family attach the rings to the cord.

This custom seems to be losing ground quickly, for while many people knew of it further south in Malabar, I never saw this ornament in use in North Malabar. Many Cherumans were seen between Cannanore and Mount Dilly, but all said few use it now, preferring glass or imitation coral beads for their necklets. There is no doubt that formerly the custom was widely spread among the servile population of Kerala, and as these people's religious beliefs consist almost solely of the dread of malignant spirits, it is extremely probable that originally the necklet was used as an amulet against demons and the evil eye, though now it is more generally considered as a sept badge. The custom of long-settled Malayali immigrants (Mukuvans, etc.) on the South Canara coast, of putting similar necklaces round their children's necks already referred to on p. 153, appears to furnish strong corroboration of this conclusion.

In Bengal a few ornamental finger rings are now made, carved in simple patterns and highly polished. These are not in great demand and I am uncertain as to whether they are worn as ornaments or as amulets. At Kilakarai a few roughly decorated thin finger-rings to be used as amulets are also produced, in addition to the roughly made, thick and clumsy sections cut from Strombus shells.

The first mention of the use of discs cut from chank-shells to ornament caps and headdresses occurs in Tavernier's 'Indian Travels'. In 1666 he was in Dacca and records the fact that Bhutan merchants took home quantities of "round and square pieces (of shell) of the size of our 15 sol coins." He also states that "all the people of the north, men, women, girls and boys, suspend small pieces of shell both round and square from their hair and ears".

Whether the trade is as large as in former days, I cannot say. It is now of small monetary value: the Thibetans, Bhuteas, Nagas and some wild tribes on the Chinese border seem to be the only people who now

utilize these discs. In many cases they are employed as ornaments to decorate headdresses, and in some cases (Thibet) they are even attached or hung from the hair reminding one of the custom of the wandering Lambadi (Brinjari) women who sometimes hang ornaments from locks of hair in front of the ears.

The Nagas of Assam, lately brought to prominent notice through the good work they did as carriers during the Abor punitive expedition (1912), employ these discs both to form necklaces and to decorate the handsome plaited cane helmets worn by the men. These latter are conical in shape, about a foot high, and covered with a layer of fur and hair, black or red in colour. When decorated with chank-shell discs, these are arranged as coronals, adding most effectively to the general design (W. Crooke, "Natives of Northern India," p. 47, London, 1907). As the Nagas are known to have set much greater store by the chank in former times, say prior to the middle of the nineteenth century, it is probable that then the use of chank discs as items of ornament was much more general among this race than it is now. Still the custom is quite common, for Mr. Stanley Kemp, who accompanied the Abor expedition as naturalist, informs me that the Naga coolies employed as carriers frequently wore necklaces formed of square concave portions of chank-shell with a large cornelian set *en cabochon* in the centre. Sometimes long cylindrical beads made from chank shell, tapered slightly at either end, were used instead and cornelian beads were often seen in conjunction.

In the middle of last century Major John Butler mentions ("Travels and Adventures in the Province of Assam," p. 148, London, 1855) that at sixteen years of age a Naga youth "puts on ivory armlets or else wooden or red-coloured cane ones round his neck. He suspends conch shells with a black thread" (round his neck) "puts brass ornaments into his ears and wears the black kilt; and if a man has killed another in war he wears three or four rows of cowries round the kilt." From a specimen of chank-shell necklace from the Naga hills contained in the ethnological collection of the Indian Museum, Calcutta, it appears that the shells before being used were bisected longitudinally, each half being hung as a pendant by one

end from the cord encircling the neck, the whole forming a most uncomfortable-looking decoration, particularly as the custom is to wear them slung at the back of the neck.*

Sixty years ago chanks constituted the currency of the Naga tribes, but with the advent of the rupee, the consideration in which these shells was held largely disappeared, and now these quaint chank necklaces are seldom worn. Mr. Kemp saw them worn on only one or two occasions during the Abor expedition (1912).

At death these ornaments and all the other items of the deceased's dress together with all his treasured weapons are laid upon the grave.

Among the Abors the custom of wearing chank ornaments must be very rare, for Mr. Kemp, who most kindly gave attention to this subject, saw only a single instance —a Gam or headman of Komsing village, who was found wearing a necklace composed of round concave discs of shell.

The furthest point east to which I have been able to trace the use of chank discs is the banks of the Upper Mekong to the northward of Tali-fu in the Chinese Province of Yunnan. Here Prince Henri d'Orleans ("From Tonkin to India," p. 174, London, 1898) found the women of the wild Lissu tribe, a branch of the Lolo race, "often naked to the waist; they had a little hempen skirt and a Chinese cap decked with cowries and round white discs which are said to be brought from Thibet and looked to me as if cut out of large shells." In some villages they wore a heavy turban in place of the little white disc'd cap.

The finest discs I have seen are prehistoric in age, having been taken from the very peculiar oblong sarcophagi, made of red pottery and raised on 6 or 8 stumpy legs, from the ancient graves at Perambair in the south of Chingleput District, near Madras. These discs,

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* Similarly bisected chanks hung by a cord round the neck are also seen among the Chins of the Central and Northern sections of the Chin hills in Burma. My informant, Mr. W. Street of the Burma Commission, states that the women alone wear this neck ornament; usually a single shell is used and apparently fresh supplies no longer come into the country as those now worn are heirlooms in the families of the wearers. It is probable that cessation of the supply synchronized with the discontinuance of chank shell currency among the Naga tribes living to the north of the Chin country.

two in number, now on exhibit in the Madras Museum, are respectively about $2\frac{1}{2}$ and 3 inches in diameter; in both there is a small central perforation. They appear to have been cut from the belly of large shells as the convexity is not great. The convex surface in each case is ornamented with geometrical patterns (different in each case) of much delicacy. One is illustrated on Pl. xxxiii of the report for 1908–09 of the Director-General of Archæology.

The shape and size of these ornaments and the character of the incised patterns suggest that they have been used as boss ornaments for the back hair in the manner affected by native women of the higher castes in South India. Until I had seen these ancient chank ornaments I had never heard of the chank shell being used for this purpose but subsequently I have been told that the custom still survives in Travancore and that when the wearers cannot afford gold these boss ornaments for the back hair may also be made from ivory, bone, horn and even coconut-shell. These are usually richly carved and frequently mounted in gold. The central hole in the chank disc would in such cases be used to secure the head of the spiral wire needful to secure the ornament to the hair.

Beads made from chank-shells do not seem to be used except to form bracelet and necklace amulets. I have seen no carefully worked and polished beads suitable for purely ornamental use. It is possible, however, that necklaces have been made from the pearls which are occasionally, but very rarely, found in the flesh (mantle) of the chank. Such pearls are not uncommon in the West Indian conch which produces them in sufficient frequency to constitute them regular items in the jewellery trade. These "pink pearls" as they are called, are usually made up into necklaces. The Indian chank is a much smaller shell, and although fished in far greater numbers than the West Indian shell, it is exceedingly rare for a pearl to be found. The colour of the few found varies from porcelain white to pale pink, and while it would be a matter of the greatest difficulty to obtain enough during many years' search to make a necklace, matching the colour and grading the size of the pearls to make the ornament a thing of beauty, is well nigh an

impossibility. I have three of these chank pearls in my possession; they are the only ones I have ever seen. The largest is a perfect sphere, $\frac{13}{32}$ inch in diameter, porcelain or opal white in colour, of lovely skin grained with a most peculiar mottling something after the fashion of the "watering" of watered silk. Another is slightly elongated in one axis ($\frac{5}{16}$ inch $\times$ $\frac{1}{4}$ inch), oval or elliptical in outline, of a very pale pink tint and possessing also the peculiar watered grain shown by its fellow. The third is salmon coloured, almost spherical, with a diameter of $\frac{11}{32}$ inch.

A few coat buttons are now made from chank-shells at Dacca,—a recent departure on the part of one or two cutters who have made a feeble and ill sustained attempt to open up new sources of demand. The main obstacle to the success of this new departure lies primarily in the lack of power-tools to cut up, drill and polish the material more cheaply than is possible so long as dependence is placed upon hand labour, however low be the wages paid. Granted even this change, great difficulties in the way of success exist in the lack of artistic versatility characterising the chank cutters' trade and the inability of the ordinary Indian manufacturer to appreciate the value of a judicious advertisement of his wares. He grudges to pay out money in advertisement and when he does so he usually brings about the loss he fears by lack of foresight in keeping up his stock of the advertised article or by the foolish as well as dishonest trick of sending an inferior article to that ordered and paid for by the customer who answers his advertisement.

With power machinery utilized by firms trading on sound and honest principles, there should be a very great field for the sale of chank buttons There is nearly always a good demand for handsome buttons suitable for the decoration of ladies' jackets and coats and owing to the beautiful porcellaneous appearance of chank-shell when cut and engraved with some attractive or distinctive pattern, suitably designed buttons should meet with appreciation in the European and American dress trade. Rough cut buttons priced at what seems to the European ridiculously high rates are worse than useless, and beyond this the imagination of the Dacca manufacturer cannot soar—at present.

(*l*) Feeding spouts.

In the ordinary everyday life of the people of Southern India, the chank subserves several useful functions. Some of these have already been touched upon, but the most useful remains to be mentioned—that of small shells used as feeding spouts when weaning infants. The bazaars in every big Tamil town furnish these primitive utensils, made from undersized shells usually of the sub-fossil description obtained from the muddy lagoons near Jaffna in Ceylon.

The shells are prepared for market by breaking down parts of the inner portion of the terminal whorls just inside the mouth and by removing the central part of the columella. The canal-shaped canaliculum of the mouth is deepened and straightened to form a rough spout; the exterior surface of the shell is rubbed down and upon it is engraved a rude pattern, usually in the form of a spiral scroll with a few star-shaped emblems; last of all it receives a thin coating of fine lime or white-wash to hide imperfections and improve the colour. For the purpose intended it is quite effective, but how far the crevices of the interior, by offering obstacles to efficient cleansing, harbour and promote the rapid growth of bacteria and so lead directly to infantile diarrhœa, it is difficult to say. If the shell be boiled daily, a very simple precaution and easier to do in the case of a chank than in that of a glass bottle, there would be no danger, but I fear this is seldom thought of. In feeding baby monkeys just taken from their mother I have found this feeding shell most useful; the sight of the little creature hanging on with both fore-paws to the shell, half choking in its eagerness to swallow the milk and all the time trying to locate every noise and movement in the room with its great nervous eyes is one of the quaintest pictures imaginable.

(*m*) Currency.

That the chank once served a savage people as a form of currency is little known, but so it was in the Naga country of Assam until less than 50 years ago. Major-General John Butler who commanded an early expedition into the Naga hills, tells (*loc. cit.*, p. 157) that he found the Nagas of many villages using chank-shells as currency with a fixed and thoroughly well-determined

exchange value relative to the price of all articles of trade. Slaves and cattle in particular were always valued in chank-shells. Thus while a male slave was worth one cow and three chank-shells, a female slave—much more valuable, the suffragettes will learn with pleasure, than a mere man—was worth as much as three cows and four or five chank-shells. Now a cow was valued at ten chank-shells, a pig at two shells, a goat was the same rate, and a fowl at one packet of salt. As a chank-shell was considered worth one rupee, a short calculation will show that a male slave was worth Rs. 13, and a female slave Rs. 34, or 34 shells. The ransoms of villages captured during raids in these good old days were largely paid in chank-shells, beads, cows, pigs and other portable wealth. Chank-shells and beads were the chief items of currency but even in Butler's time, the inevitable invasion of the rupee was already successful in the valleys most accessible to low-country traders. At the village of Hosang-hajoo the chief remarked to Major Butler, with a show of considerable pride, "since we became British subjects, we have paid revenue in coin and with it we can procure anything we require; we therefore no longer want shells and beads."

I see no reason to believe that chank currency ever extended beyond the hill peoples of Assam and possibly some of the adjoining hill tracts. On some coins issued by the ancient Pandiyan and Chalukyan dynasties of southern India a chank-shell appears as the principal symbol (Thurston, I, 328); this might be held as evidence of a preceding currency consisting of the actual object so represented, whereof the memory was perpetuated in pictorial form upon one face of the coins and tokens which came to take its place as more convenient units of exchange. But there is much more reason to believe that the chank was represented on such coins for a similar reason to that which actuates the present-day States of Travancore and Cochin to adopt a similar symbol on their current coins. In these two States, the homes of southern Hindu orthodoxy, the chank-shell symbolizes the religious belief of the ruling race and is their emblem as the rose stands for England and the thistle for Scotland. Both these States utilized it as a distinctive symbol on their earliest issues of local postage stamps in place of and to the exclusion of the sovereign's head—the customary pivot of design in European stamps.

Both the States of Travancore and Cochin also employ the chank in their recently designed armorial bearings. In the case of Travancore, the arms described in heraldic terms consist of :—Argent, on a fesse azure, three reversed (sinistral) chank-shells or ; Crest—a sea-horse proper. Motto—*Dharmosmat Kuladevatam.* In Cochin the shield bears more numerous devices ; in addition to a left-handed chank, a palanquin, a brass lamp and an umbrella are depicted, with elephant supporters as in the case of Travancore. In all cases where these States use the chank symbol, it is necessary to note that it should occur in the abnormal sinistral or reversed form, this being the Royal and Sacred Chank—the Chank of Vishnu.

When the Maharaja of Travancore performs *tulabharam*, a coronation ceremony, wherein he weighs himself in scales against gold, special gold coins are struck called tulabhāra kāsu (*cf.* our Maundy money). On one side a figure of a chank shell appears, on the other the legend "Sri Padmanābha" in Malayalam characters. After the ceremony these coins are distributed among the Brahmans who have assembled from all parts of the country.

(*n*) Chank lime.

A minor use to which chank-shells are put in the coastal districts where they occur, and also in those localities in Bengal where bangle factories exist, is to calcine these in kilns. The lime so produced is esteemed the best quality obtainable in India, fully equal to, if not better than, that obtained by burning pearl oyster shells. The auspicious nature of the shell adds further value to the product, and when a temple or shrine or specially fine newly built house has to be whitewashed, chank lime is greatly sought after for this purpose in the Tamil districts. I have even received petitions praying that permission be granted for the collection of chanks for this purpose.

At the present day the fact that almost all the produce of the South Indian chank fisheries is exported to Bengal, makes it very difficult to obtain chank lime—the shells are too valuable to calcine. That it was not so in former times, in some cases at least, is to be seen if

we inspect the walls of the old temples at Korkai, the seat of the Tinnevelly chank fishery, 800 to 2,000 years ago. The mortar still contains many recognizable fragments of chank-shells.

In Dacca and a few other towns in Bengal where the waste from the Sankhari workshops is considerable, chank lime is an article of commerce. The Collector of Bogra notes in a letter which the Reporter to Government on Economic Products has kindly submitted to me, that during the rainy season quantities of chank workshop waste is imported from Dacca into the Bogra district by boat and stored by Mahajans at Bogra and Burigunje. The lime burners take their supplies principally from these two places. He adds: "the lime produced by burning conch-shells is mostly taken with betel leaves and sometimes is used in whitewashing. One maund of conch-shells (*i.e.*, refuse) is sold at Re. 1, and slaked lime produced therefrom is sold at the rate of half anna for one seer."

(*o*) IN MEDICINE.

Apart from the uses to which chank rings and bracelets are put as amulets against certain ailments, the shell itself in several ways is used medicinally. Except in cases which have come under my personal notice, it is somewhat difficult to ascertain the exact nature of the diseases for which native practitioners employ this specific: custom appears to vary with different districts and even with different "doctors" living in the same town.

Of some there is no doubt. The belief is general throughout Tamil districts and Malabar that water which has been in contact with an article formed from a chank-shell is a charm against and a remedy for blotches, pimples and other skin troubles on the face and body. A chank ring worn on a finger is an easy way of applying the remedy, as water applied to the face or body by the hand must necessarily have been in contact with chank substance and so able to transmit the virtue thereof. This remedy is believed to act still more beneficially if the ring be rubbed upon the affected parts. In South Arcot, Tanjore, Coimbatore, Salem and Trichinopoly, certain skin diseases, eruptions, warts and even

hæmorrhoids are believed to yield to this treatment. In Coimbatore native doctors prescribe a paste made by mixing chank powder in water or by rubbing it up with human milk for use as a salve in the case of eruptions (sties) on the eyelids. Chank ointments (basmams) are also employed in the same district to cure inflammation of the eye, the growth of bad flesh (granulation) on the interior surface of the eyelids and also for piles and leprosy.

Chank-shell in the form of powder is also stated to be taken internally in South Arcot, Salem, Madura and Tinnevelly, either in water or mixed with ghee, as a specific for skin eruptions, asthma, coughs, and also to cool the system. In Salem and also in Ceylon it is used as a remedy for consumption. Both in Tanjore and Salem mixed with milk or water it is also employed as a salve or lotion applied to pimples and boils. In Malabar and South Canara, I am told, it is used in the case of rickets (*grahani*), chank ring powder ground in water being rubbed on the breast. At Tanur a street quack told me he used chank-shell powder internally as a remedy in cases of *varchcha* (gonorrhœa, I believe). In South Canara I heard of a similar use of this specific; in the latter case powdered pearl-shell and chank ring were mixed with a little sugar—a little of the mixture to be swallowed early in the morning.

Among the Tuticorin Parawas a mixture of camphor and chank powder is commonly used to relieve soreness of the eyes. A small piece of camphor is partially burned and then ground down in a small quantity of human milk upon a flat stone by means of a small well-cleaned chank-shell; a small amount of powder from the shell is thus incorporated with this peculiar ointment; sometimes the white of an egg is substituted for human milk. The ointment thus made is applied round the eyelids; it is reputed to effect a sure and speedy cure.

Pounded chank-shell is also given internally by native practitioners in Trichinopoly, Salem and Coimbatore to those who suffer from an acute form of dyspepsia called kunmam (குன்மம்). It is administered about three hours after each meal—a treatment perfectly rational as the carbonate of lime of which the shell is composed is well adapted to counteract hyperacidity of the gastric fluids.

In Gujarat and Kathiawar chank powder is prescribed as a specific in the following diseases:—Jaundice, phthisis, coughs, shooting pain in the side, general debility and, very commonly, in affections of the eyes.

With regard to the practice of prescribing it in the case of asthma, cough and consumption, a medical friend points out that while of no value in asthma, this treatment has reason for its employment in phthisical cases—the introduction of quantities of lime into the system facilitating the deposit of lime salts around tubercular centres, encapsulating them and rendering them innocuous.

In rickets the use of lime taken internally is also indicated emphatically, the disease being characterised by an insufficient deposit of lime in the bones. He also points out that in the case of hæmorrhoids, the use of lime administered internally may assist a cure by increasing the coagulative property of the patient's blood.

It appears therefore that the employment of chank-shell powder by native practitioners is not without reason in regard to certain diseases, and while it may be objected that a non-organic form of carbonate of lime should prove equally beneficial, it has to be remembered that the carbonate of lime of shells is laid down within a delicate framework of animal membrane, and this minutely divided form may possibly render it more easy of assimilation in the body and therefore more efficacious. The religious associations surrounding the chank have also their value in inspiring the confidence of patients in the value of this medicine, faith that may help largely towards a cure.

The wearing of chank rings, the rubbing of the affected parts with them and the laving of them with water which has been in contact with these rings, are forms of treatment on a different footing. They are to be considered purely as charms, without direct therapeutic value. They bear the same relation to the internal employment of powdered shell as does the quack exploitation of electricity by means of belts and bands containing discs of metal to the legitimate use of current electricity in the hands of qualified medical practitioners. If the former have any value it is by reason of faith alone.

The egg-capsule of the chank is employed by the chank and pearl divers of Tuticorin to relieve headache. They grind up a portion of the egg-capsule (sanku-pu or "chank-flower") in gingelly-oil, together with pepper and coriander seed, and apply the paste to the forehead and temples.

Finally, according to Risley (II, page 223) the shell-workers of Dacca are accustomed to extract the dried remnant of the visceral coil (called *pitta*) from the shells they receive and to sell this to native physicians as a medicine for spleen enlargement. He also states that the dust produced in sawing the shells is employed to prevent the pitting of small-pox and as an ingredient of a valuable white paint.

(*p*) Food.

During the run home from the chank beds, the divers are accustomed to extract the foot and anterior part of the body of the chank from the shells they have collected. The work is roughly performed by means of a pointed iron rod and all the apical mass, comprising the hepatic and reproductive glands, remains within the shell. What is extracted consists almost entirely of tough muscular tissue carrying the adherent horny operculum at one end. These fragments are collected in the little palmyra-leaf baskets used for bailing water out of the canoe. The flesh, called chanku-chathai, is carried home and there prepared for family use. The preparation consists of separating the operculum, boiling the flesh for a short time and then cutting the foot and head region transversely into thin slices. These are dried in the sun; when required for use they are fried in oil and eaten with rice and curry stuffs. On one occasion I essayed to try this much esteemed food, but my taste was not sufficiently cultivated; the fried slices tasted or rather smelled like frizzled shoe-leather and were altogether too tough for my teeth.

(*q*) Incense sticks.

The horny operculum is also put to use. It is dried, reduced to powder, and then employed after soaking in water as an adhesive matrix to bind together the powdered sandal-wood and other sweet smelling incense

material used in coating the incense sticks burned before shrines, or used in native shops. In Tamil these sticks go by the names of uthupaththi (உதுபத்தி) or sāmbirānik-kuchchi (சாம்பிராணிக்குச்சி); the best quality sells at the rate of 1 or 2 for 3 pies, while inferior sorts retail at from ½ to 1 pie each. The operculum itself is called nāganam or nāvanam (நாகணம் or நாவணம்); the usual rate is 2 annas per palam (= 8 tolas or just over 3 oz.).

(*r*) Assembly calls.

A call on a chank-shell is frequently employed upon native-owned plantations in South India and Ceylon to summon the workpeople to their duties: there can be no doubt that these long drawn out and penetrating booming calls are particularly well adapted to this purpose.

In the Laccadive Islands all the inhabitants are required under penalty to attend the call of the chank, sounded in cases of emergency and public requirement. Among these are counted the beaching of boats and the inauguration of rat hunts.

To conclude this account of the miscellaneous uses to which the chank is put and of which the foregoing summary has by no means exhausted the list, the following instance of the ingenuity of the Indian countryman may not be amiss. For it I am indebted to Mr. C. A. Innes, I.C.S. Apropos of a flight of winged termites, he told me that once when travelling in the Madura district, he chanced upon a low-caste man engaged upon some mysterious work on a large termite anthill: the man had a chank-shell in his hand. When asked what he was doing, he replied, "I am catching white ants to eat," and gave a blast upon the chank at one of the major openings into the hill. Hardly had he finished ere crowds of ants sallied forth from other openings, and these the man scooped up in handsful and ate without any preparation.

PART IV.—APPENDIX.

No. 1—TINNEVELLY PEARL AND CHANK FISHERIES.

Details of the net profits realized from the Pearl and Chank Fisheries from 1801–1802 to 1912–1913.

Season.	Net revenue derived from the Chank Fishery.	Net revenue derived from the Pearl Fishery.
	Rs.	Rs.
1801–2	38,850	...
1802–3	39,025	...
1803–4	28,700	...
1804–5	40,937	39,109
1805–6	19,250	...
1806–7	17,646	2,86,610
1807–8	27,449	...
1808–9	23,260	...
1809–10	23,698	2,36,968
1810–11	31,221	...
1811–12	36,458	...
1812–13	39,407	...
1813–14	24,826	...
1814–15	17,937	...
1815–16	16,119	...
1816–17	25,521	...
1817–18	20,854	1,68,014
1818–19	28,292	...
1819–20	11,667	...
1820–21	28,292	...
1821–22	19,787	1,48,012
1822–23	32,000	...
1823–24	38,500	...
1824–25	43,500	...
1825–26	36,250	...
1826–27	36,250	...
1827–28	36,250	68,593
1828–29	2,327	...
1829–30	4,092	99,684
1830–31	3,904	...
1831–32	3,155	...
1832–33	1,500	...
1833–34	1,000	...
1834–35	1,214	...
1835–36	2,500	...
1836–37	5,000	...
Carried forward ...	8,06,638	10,46,990

Details of the net profits realized from the Pearl and Chank Fisheries from 1801–2 to 1912–13—continued.

Season.	Net revenue derived from the Chank Fishery. Rs.	Net revenue derived from the Pearl Fishery. Rs.
Brought forward ...	8,06,638	10,46,990
1837–38	5,000	...
1838–39	5,000	...
1839–40	No fishery.	...
1840–41	2,598	...
1841–42	9,113	...
1842–43	9,113	...
1843–44	14,867	...
1844–45	14,867	...
1845–46	14,867	...
1846–47	30,501	...
1847–48	18,973	...
1848–49	18,336	...
1849–50	14,000	...
1850–51	10,551	...
1851–52	Discontinued.	...
1852–53	2,550	...
1853–54	2,250	...
1854–55	2,250	...
1855–56	2,250	...
1856–57	4,600	...
1857–58	4,600	...
1858–59	4,600	...
1859–60	4,600	...
1860–61	4,600	2,21,861
1861–62	6,400	1,10,619
1862–63	6,400	...
1863–64	6,000	...
1864–65	4,400	...
1865–66	2,500	...
1866–67	3,750	...
1867–68	3,750	...
1868–69	3,250	...
1869–70	3,250	...
1870–71	2,400	...
1871–72	...	...
1872–73	3,750	...
1873–74	9,515	...
1874–75	18,156	...
1875–76	6,900	...
1876–77	12,066	...
1877–78	22,904	...
1878–79	22,250	...
1879–80	6,715	...
Carried forward ...	11,89,177	13,79,470

Details of the net profits realized from the Pearl and Chank Fisheries from 1801–2 to 1912–13—continued.

Season.	Net revenue derived from the Chank Fishery. Rs.	Net revenue derived from the Pearl Fishery. Rs.
Brought forward ...	11,89,177	13,79,470
1880–81	9,646	...
1881–82	28,451	...
1882–83	22,039	...
1883–84	11,347	...
1884–85	No fishery.	...
1885–86	23,970	...
1886–87	10,703	...
1887–88	4,138	...
1888–89	902	1,58,483
1889–90	3,092	7,803
1890–91	19,414	...
1891–92	...	...
1892–93	8,038	...
1893–94	2,824	...
1894–95	8,455	...
1895–96	11,068	...
1896–97	11,879	...
1897–98	11,138	...
1898–99	9,587	...
1899–1900	10,665	11,033
1900–01	16,730	...
1901–02	17,421	...
1902–03	2,869	...
1903–04	15,441	...
1904–05	10,384	...
1905–06	6,030	...
1906–07	15,832	...
1907–08	10,881	7,282
1908–09	18,397	...
1909–10	26,490	...
1910–11	21,424	...
1911–12	12,001	...
1912–13	9,395	...
Total for 112 years ...	15,41,731	15,64,071

No. 2.—TINNEVELLY CHANK FISHERY.

Statement showing the number of full-sized chank shells fished and the net profit realised from 1876–1877 to 1912–1913.

Season.	Chanks fished.	Rate per 1,000. Rs.	A.	P.	Net amount realized. Rs.	A.	P.
1876–77	282,737	71	4	0	12,066	4	6
1877–78	360,131	91	0	0	22,904	4	7
1878–79	388,064	83	0	0	22,250	4	7
1879–80	123,540	85	10	0	6,714	13	2
1880–81	105,277	125	8	0	9,645	8	3
1881–82	303,590	115	2	0	28,450	8	6
1882–83	247,696	116	3	0	22,038	13	7
1883–84	210,005	82	11	0	11,347	1	5
1884–85	...	...			No fishery.		
1885–86	332,757	96	0	0	23,970	0	11
1886–87	183,398	85	8	0	10,703	6	11
1887–88	50,558	123	0	0	4,137	12	3
1888–89	26,537	76	6	1	901	14	2
1889–90	55,639	84	6	11	3,091	10	2
1890–91	343,726	79	8	0	19,413	15	0
1891–92 }	316,354	45	0	0	...		
1892–93 }		51	0	0	8,038	5	10
1893–94	86,474	57	8	0	2,824	3	10
1894–95	204,593	62	14	10	8,455	3	5
1895–96	185,641	81	6	3	11,067	14	10
1896–97	209,801	77	6	3	11,878	8	7
1897–98	187,641	81	8	0	11,138	5	2
1898–99	147,900	87	15	9	9,587	7	10
1899–00	118,648	112	11	0	10,665	3	0
1900–01	205,671	113	1	0	16,729	12	0
1901–02	336,908	83	10	9	17,420	8	2
1902–03	102,817	63	0	0	2,869	7	2
1903–04	135,067	154	13	4	15,440	12	11
1904–05	118,634	121	0	6	10,384	4	9
1905–06	86,725	104	6	11	6,029	9	0
1906–07	118,580	167	4	7	15,832	0	9
1907–08	163,671	99	8	8	10,880	11	5
1908–09	272,841	99	9	7	18,396	13	7
1909–10	304,275	121	9	9	26,489	14	0
1910–11	281,330	110	0	0	21,423	11	9
1911–12	166,144	110	0	0	12,001	5	9
1912–13	136,542	110	0	0	9,394	12	10
Total of Chanks	6,899,912	Total proceeds Rs.			4,54,585	6	7

No. 3.—SALE CONDITIONS GOVERNING TENDERS FOR THE PRODUCE OF THE TINNEVELLY CHANK FISHERY.

Sale of Chank Shells.

TENDERS are invited for the purchase in two separate lots of the undermentioned chank-shells :—

(1) The whole of the catch made during the 1910–1911 season (ending 30th June 1911) from the Tinnevelly banks, except any shells retained by Government.

(2) The catch to date from the Tanjore banks, not exceeding 15,000 shells.

Both lots will be delivered at Tuticorin.

Tinnevelly Chanks.

At the present date, about 1½ lakh of Tinnevelly shells have been collected and it is estimated that the total catch will amount to from 3 to 3½ lakhs. The Tinnevelly shells are being sorted from day to day into nine sizes from 2¼-inch gauge upwards, which should prove a great convenience to the successful tenderer, saving him both delay and expense.

Sale Conditions, Tinnevelly Shells.

1. Tenders must be at one rate per 1,000 shells of 2¼-inch gauge approximate and upwards, and at a separate rate per 1,000 for those under 2¼-inch gauge approximate and for wormed.

2. Each tender must be accompanied by a deposit of Rs. 1,000 and will be received up to noon of Wednesday, the 1st March 1911.

3. Tenders (which must be sealed) must be addressed to the Superintendent of Pearl and Chank Fisheries, Tuticorin, who will open and submit them to the Honorary Director, Madras Fisheries, who reserves to himself the right to reject any or all without assigning any reason for so doing.

4. The successful tenderer must be prepared to accept delivery of any quantity of shells not exceeding four lakhs in number.

5. Previous to the date mentioned for the sale, every facility will be given to intending purchasers to inspect the shells in the godown and *their attention is particularly called to this.*

6. *Delivery.*—One lakh or more of classified shells will be ready for delivery in No. 1 godown immediately after acceptance of tender and a second lakh (or more) will probably be ready in No. 2 godown as soon as the purchaser clears all the shells from No. 1 godown. The remainder will be delivered at the close of the fishing season which will be duly intimated by the Superintendent. The purchaser shall have the option of taking delivery in three lots as above, or he may postpone taking delivery till the close of the season.

7. *Additional deposit.*—The successful tenderer to remit into the treasury an additional deposit of Rs. 2,000 within one week of the intimation to him of the acceptance of his tender as guarantee for the due fulfilment of the contract. The total deposit of Rs. 3,000 will be refunded when payment in full for the shells is completed.

8. *Payment.*—The full value of each respective lot of the above three lots of shells must be remitted into the treasury prior to taking delivery thereof.

9. If the successful tenderer fails to pay the additional deposit of Rs. 2,000 within the prescribed period of seven days, or fails to pay the full value of the shells within seven days from intimation from the Superintendent of Pearl and Chank Fisheries to him that the fishing season is closed, the shells will be resold at his risk and his deposit or deposits forfeited to Government.

10. The shells, as paid for, to be removed from the godowns within fifteen days of the payment made in respect thereof. Rent at the rate of Rs. 2 per day will be charged for any further period.

11. No complaints of shortage can be entertained, the purchaser to accept the figures furnished by the Superintendent of Pearl and Chank Fisheries. No allowance will be made for undersized, wormed or defective shells whichever heap they may be found in. The purchase of the shells shall be at the sole risk of the purchaser, and the Government accept no responsibility as regards the failure of any of the shells to come up to the specification. Tenderers must state that they understand and accept these conditions.

12. Further information including the particulars of shells sorted to date will be supplied upon application to the undersigned.

Sale Conditions, Tanjore Shells.

1. The conditions numbered 1, 3, 5, 10 and 11 in the notice regarding the Tinnevelly lot shall apply equally to the Tanjore shells.

2. Each tender must be accompanied by a deposit of Rs. 100 and must be delivered to the undersigned before noon on Tuesday, the 28th February 1911.

3. These Tanjore shells are not sorted into sizes other than those of and above 2¼ inches in approximate diameter and those under this size and those wormed.

4. Payment must be made within seven days from notification being given to the purchaser of the acceptance of his tender, failing which the shells will be resold at his risk and his deposit forfeited to Government.

5. Delivery will be given at Tuticorin.

TUTICORIN PEARL AND CHANK FISHERIES OFFICE,
16*th January* 1911.

J. HORNELL,
Superintendent of Pearl and Chank Fisheries.

No. 4.—RAMNAD CHANK FISHERY.

Statement of the revenue derived by the Zamindari from its Chank Fishery during the past 33 years.

Year.	Fasli.	Rental received. Rs.	Year.	Fasli.	Rental received. Rs.
1880–81	1290	2,200	1899–00	1309	2,501
1881–82	1291	2,200	1900–01	1310	3,501
1882–83	1292	2,200	1901–02	1311	4,001
1883–84	1293	2,200	1902–03	1312	4,001
1884–85	1294	2,455	1903–04	1313	4,001
1885–86	1295	2,455	1904–05	1314	4,001
1886–87	1296	2,455	1905–06	1315	4,001
1887–88	1297	2,455	1906–07	1316	4,001
1888–89	1298	2,455	1907–08	1317	4,001
1889–90	1299	3,200	1908–09	1318	4,060
1890–91	1300	3,200	1909–10	1319	4,060
1891–92	1301	3,200	1910–11	1320	4,060
1892–93	1302	3,200	1911–12	1321	4,060
1893–94	1303	3,200	1912–13	1322	4,060
1894–95	1304	1,700			
1895–96	1305	1,700		Total Rs.	99,884
1896–97	1306	1,700			
1897–98	1307	1,700	or an average of Rs. 3,026–12–7 per annum.		
1898–99	1308	1,700			

No. 5.—SIVAGANGA CHANK FISHERY.

Statement of the revenue derived by the Zamindari from its Chank Fishery during the past 25 years.

Season.	Fasli.	Rental received. Rs.	Season.	Fasli.	Rental received. Rs.
1886–87	1296	*Nil.*	1901–02	1311	260
1887–88	1297	*Nil.*	1902–03	1312	260
1888–89	1298	52	1903–04	1313	260
1889–90	1299	231	1904–05	1314	260
1890–91	1300	Not known.	1905–06	1315	260
			1906–07	1316	120
1891–92	1301	550	1907–08	1317	120
1892–93	1302	550	1908–09	1318	125
1893–94	1303	550	1909–10	1319	125
1894–95	1304	550	1910–11	1320	Not leased
1895–96	1305	550			
1896–97	1306	100			
1897–98	1307	100	Total for 25 years Rs.		5,323
1898–99	1308	100			
1899–00	1309	100	an average of Rs. 213 per annum.		
1900–01	1310	100			

No. 6.—TANJORE CHANK FISHERY.

Statement showing the annual revenue derived from this fishery since the cession of the district in A.D. 1799.

Season.	Rs.	Season.	Rs.
1800–01	4,346	1845–46	1,205
1801–02	2,137	1846–47	1,000
1802–03	3,407	1847–48	1,000
1803–04	2,100	1848–49	1,000
1804–05	2,689	1849–50	800
1805–06	3,525	1850–51	800
1806–07	10,198	1851–52	630
1807–08	4,456	1852–53	630
1808–09	9,838	1853–54	...
1809–10	7,497	1854–55	...
1810–11	6,841	1855–56	...
1811–12	6,840	1856–57	1,000
1812–13	2,572	1857–58	810
1813–14	4,398	1858–59	1,200
1814–15	1,785	1859–60	1,200
1815–16	3,792	1860–61	1,200
1816–17	3,998	1861–62	1,200
1817–18	4,527	1862–63	1,200
1818–19	5,468	1863–64	1,410
1819–20	4,597	1864–65	1,410
1820–21	4,433	1865–66	1,410
1821–22	4,666	1866–67	675
1822–23	7,000	1867–68	485
1823–24	5,444	1868–69	220
1824–25	5,445	1869–70	220
1825–26	5,444	1870–71	220
1826–27	...	1871–72	220
1827–28	...	1872–73	220
1828–29	...	1873–74	241
1829–30	800	1874–75	241
1830–31	1,450	1875–76	241
1831–32	1,450	1876–77	241
1832–33	442	1877–78	241
1833–34	1,410	1878–79	240
1834–35	1,410	1879–80	240
1835–36	1,410	1880–81	240
1836–37	...	1881–82	240
1837–38	1,531	1882–83	240
1838–39	1,910	1883–84	115
1839–40	1,910	1884–85	Not known.
1840–41	2,700	1885–86	Not known.
1841–42	2,100	1886–87	Not known.
1842–43	2,200	1887–88	58
1843–44	570	1888–89	...
1844–45	...	1889–90	...

Statement showing the annual revenue derived from this fishery since the cession of the district in A.D. 1799—continued.

Season.	Rs.	Season.	Rs.
1890–91	...	1904–05	656
1891–92	...	1905–06	...
1892–93	...	1906–07	512
1893–94	...	1907–08 ... ... }	522
1894–95	19	1908–09 ... ... }	
1895–96	77	1909–10 ... ... }	696
1896–97	58	1910–11 ... ... }	
1897–98	96	1911–12	632
1898–99	38	1912–13	213
1899–00	288		
1900–01 ... ... }	957		
1901–02 ... ... }			
1902–03 ... ... }			
1903–04 ... ... }			

FIG. 1.—THE INDIAN CHANK, TURBINELLA PYRUM, LINN. CENTRAL TYPE OF FORM.

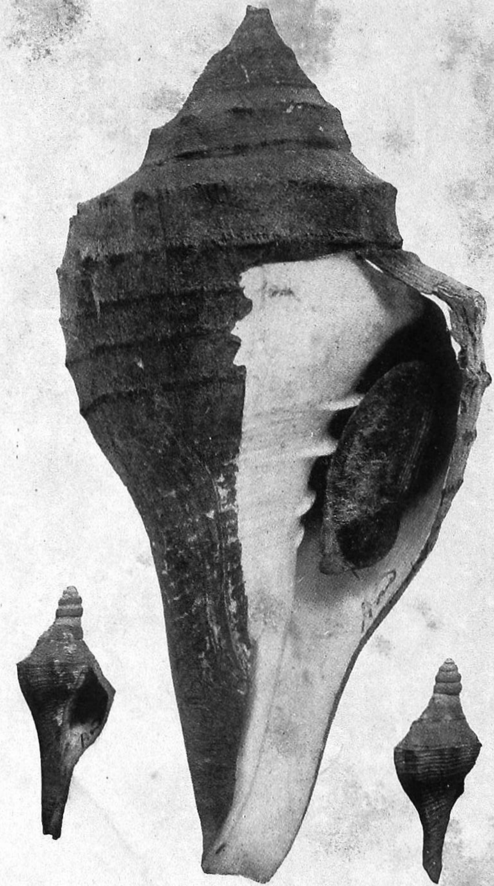
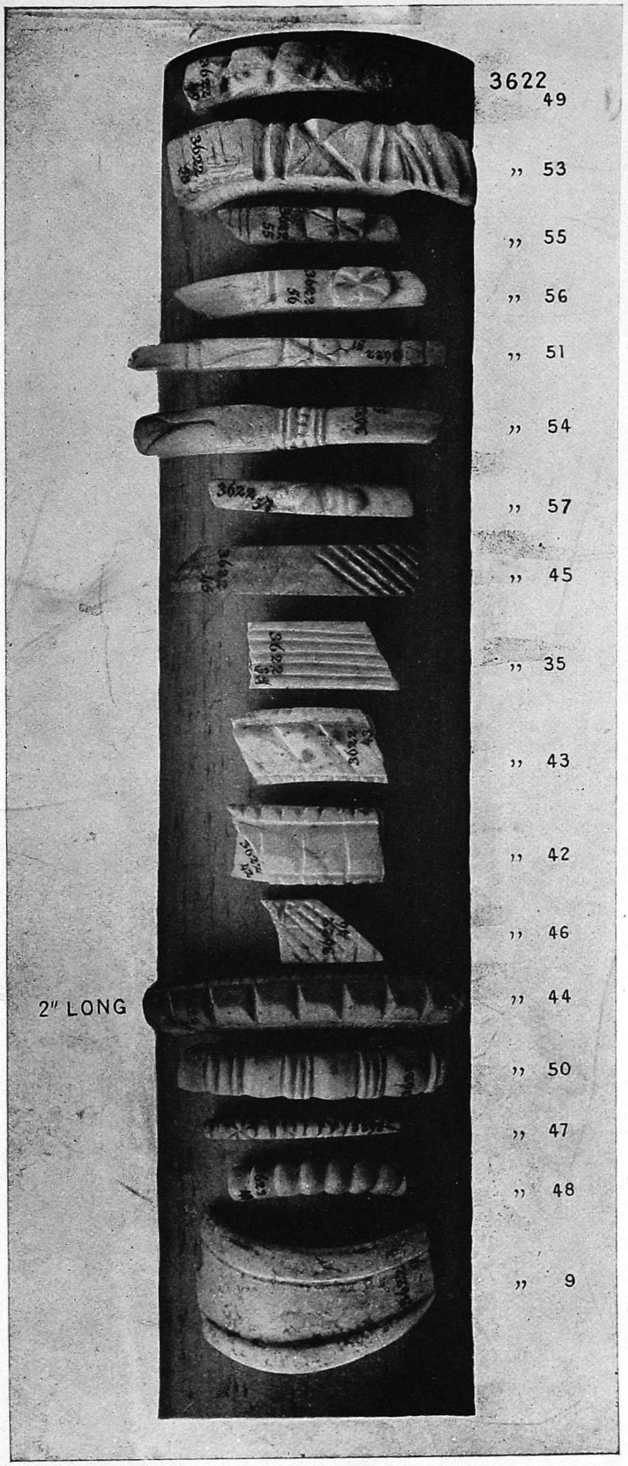


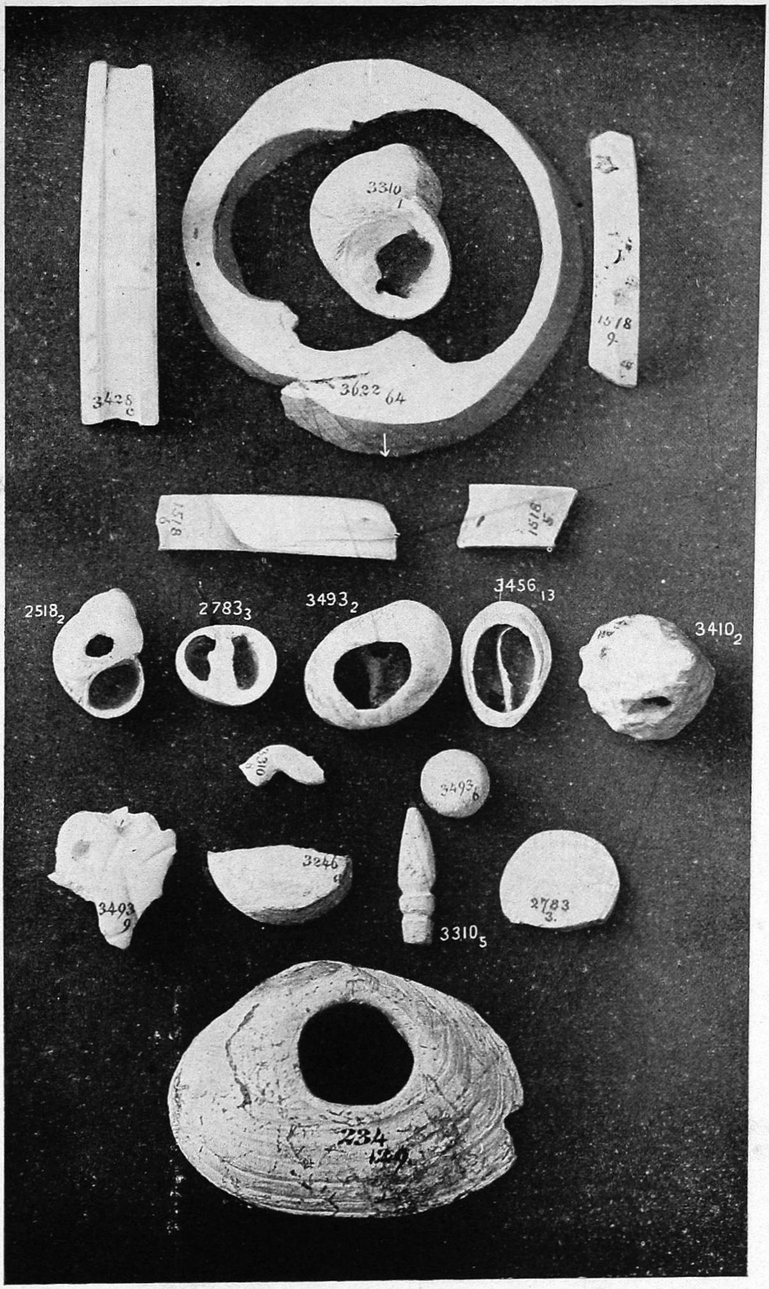
FIG. 2.—ELONGATED VARIETY FROM THE ANDAMAN ISLANDS, ADULT AND 2 VERY YOUNG SPECIMENS. THE LATTER SHOW THE PROTOCONCH PERSISTING.



ANCIENT CHANK BANGLE FRAGMENTS FROM AMBAVALLI, KATHIAWAR.

1516-B
3066-b
3310-7
3310-6
3623-2
3615-1
3493-10
„ 11
„ 8
„ 7
„ 13
„ 19
„ 59
„ 43
„ 44
„ 45

ANCIENT CHANK BANGLE FRAGMENTS FROM GUJARAT AND KATHIAWAR WITH ONE FROM BELLARY (1516). (FOOTE-COLLECTION, MADRAS MUSEUM.)



ANCIENT SHELL ORNAMENTS, &C., FROM KATHIAWAR, BARODA, BELLARY AND MYSORE.

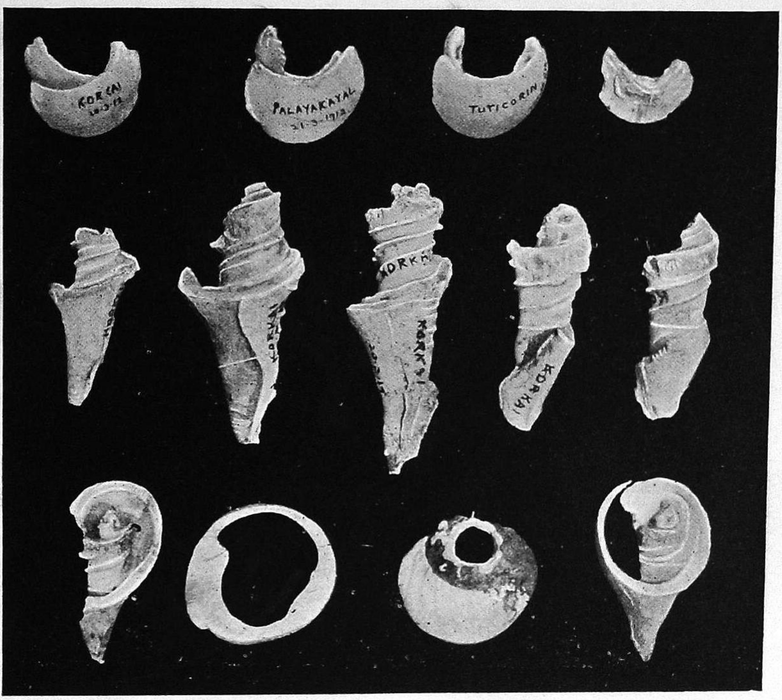


FIG. 1.—CHANK SHELL WASTE FROM ANCIENT BANGLE FACTORY SITES AT KORKAI, KAYAL AND TUTICORIN (2 UPPER ROWS) COMPARED WITH MODERN WASTE PIECES FROM DACCA (BOTTOM ROW, WHERE A WORKING SECTION IS ALSO SHOWN).

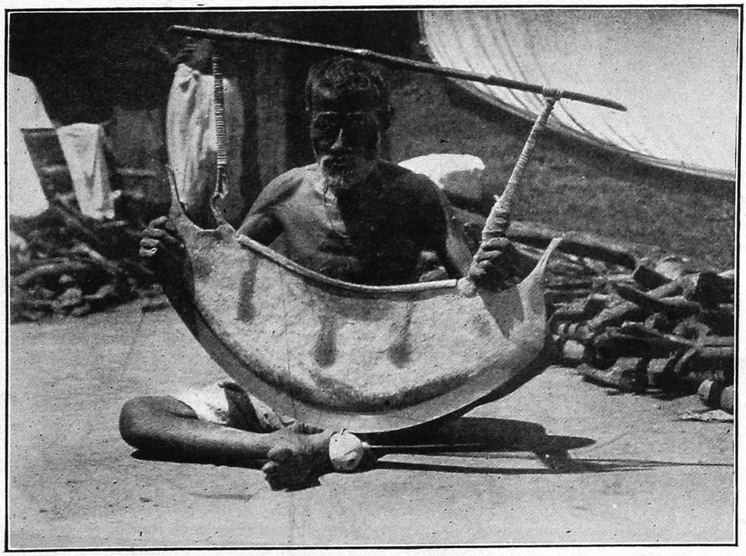


FIG. 2.—SECTIONING CHANK SHELLS IN A DACCA WORKSHOP.

[*Photo. by J. Hornell.*]

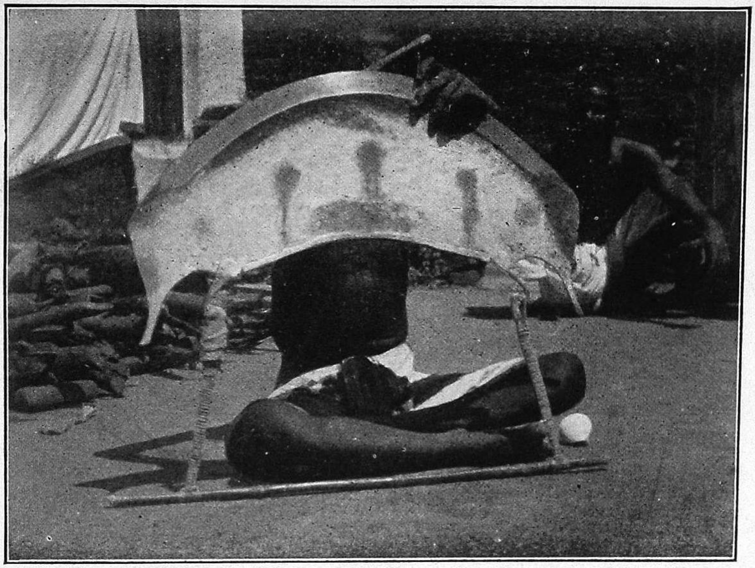


FIG. 1.—SHARPENING A CHANK SAW, DACCA.

FIG. 2.—BREAKING AWAY THE REMAINS OF THE SEPTUM FROM A SAWN CHANK CIRCLE (WORKING SECTION).

[*Photo. by J. Hornell.*]

FIG. 1.—RUBBING DOWN THE INNER SURFACE OF A CHANK WORKING SECTION, DINAJPUR, BENGAL.

FIG. 2.—FORMING A SIMPLE RIDGE PATTERN BY RUBBING DOWN THE SECTIONS ON A STONE, RANGPUR, BENGAL.

[*Photo. by J. Hornell.*]

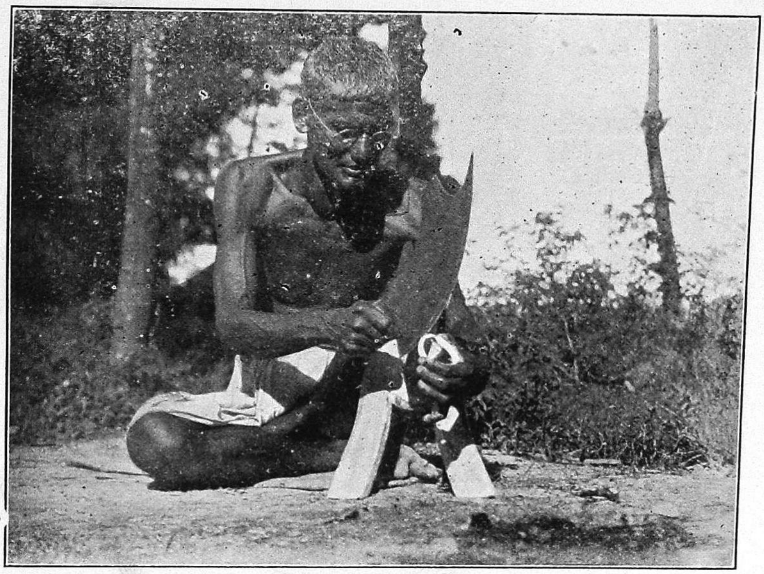


FIG. 1.—CARVING AN INCISED PATTERN, RANGPUR.

FIG. 2.—SHARPENING AN ENGRAVING SAW, DINAJPUR.

[*Photo. by J. Hornell.*]

FIG. 1.—RUBBING DOWN CINNABAR TO COLOUR LACQUER RED, DINAJPUR.

FIG. 2.—LACQUERING MARRIAGE BANGLES, DINAJPUR.

[*Photo. by J. Hornell.*]

FIG. 1.—METHOD OF USING REST WHEN FINISHING OFF AN INLAID LACQUER BANGLE, DINAJPUR.

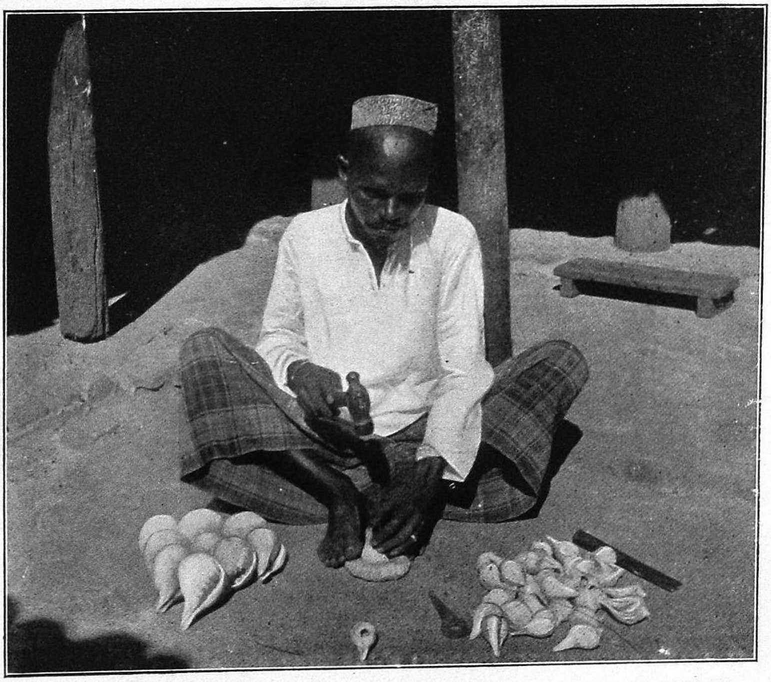
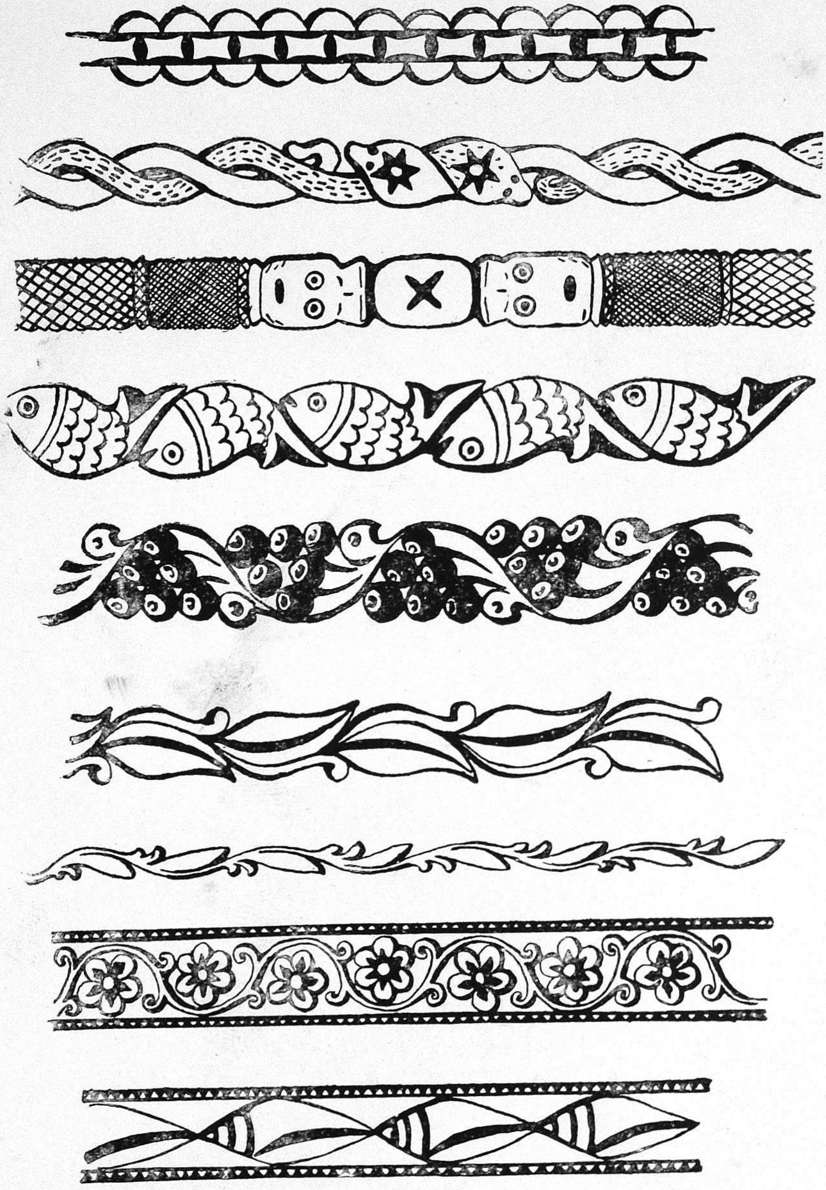


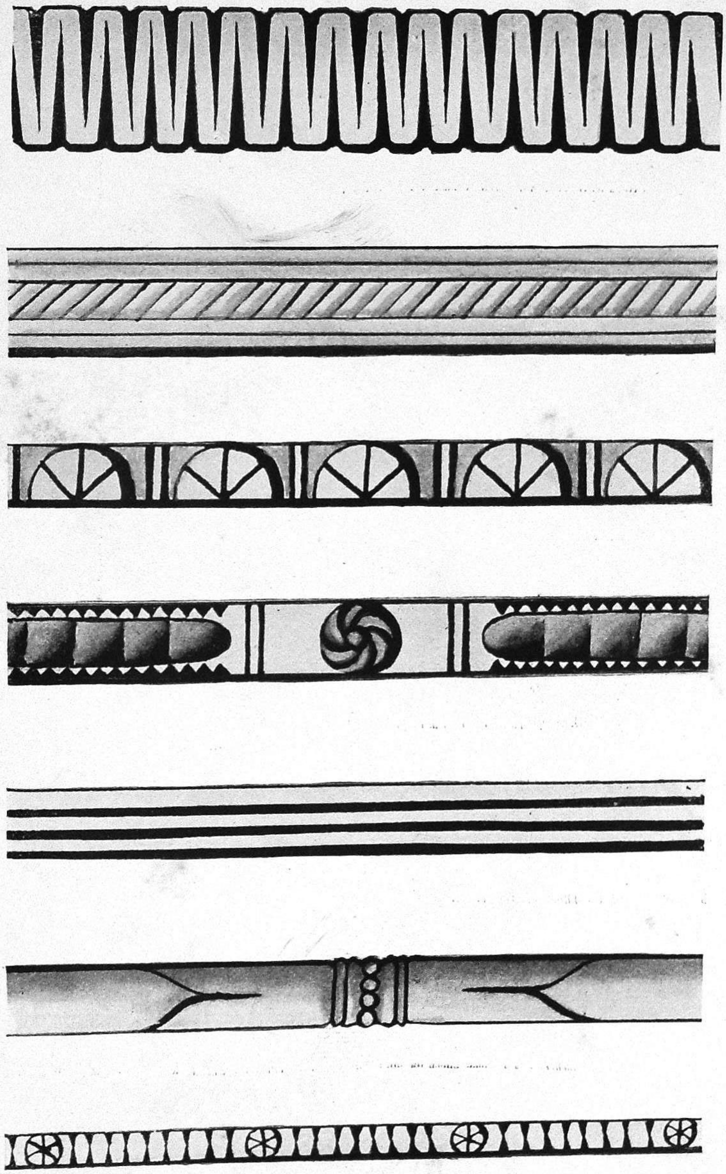
FIG. 2.—MAKING CHILDREN'S FEEDING SPOUTS FROM CHANK SHELLS, KARIMANAL, NEAR PULICAT, MADRAS.

[*Photo. by J. Hornell.*]



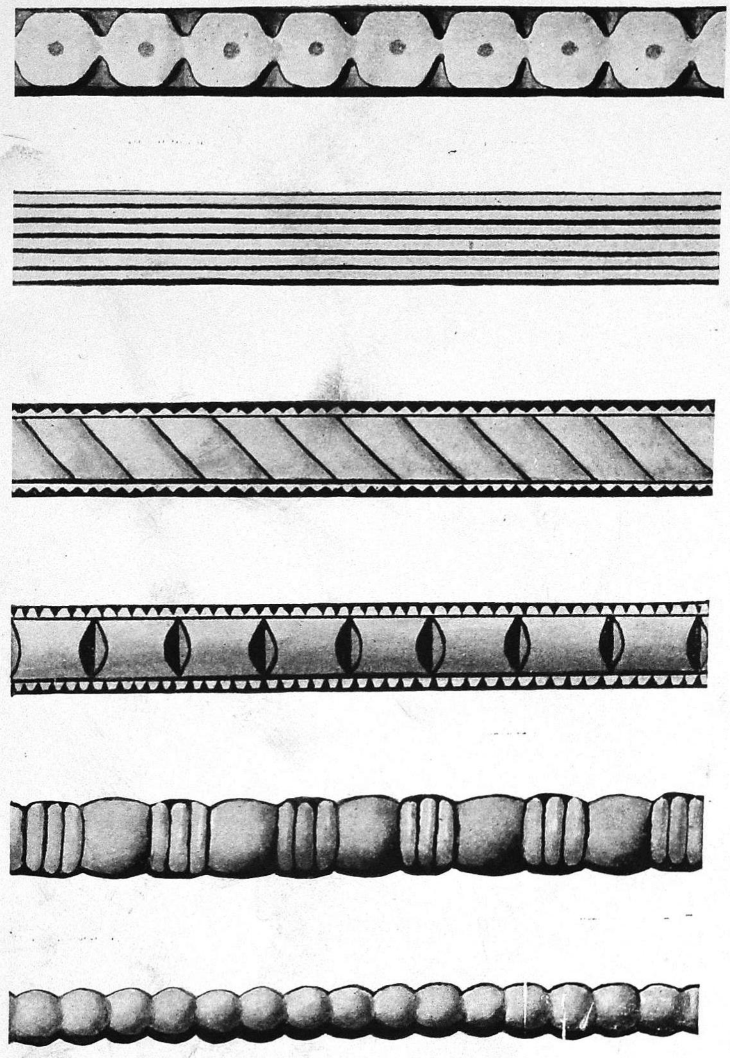
SOME CHANK-BANGLE PATTERNS CURRENT IN BENGAL AT THE PRESENT TIME.

[*Dorothy L. Hornell, del.*]



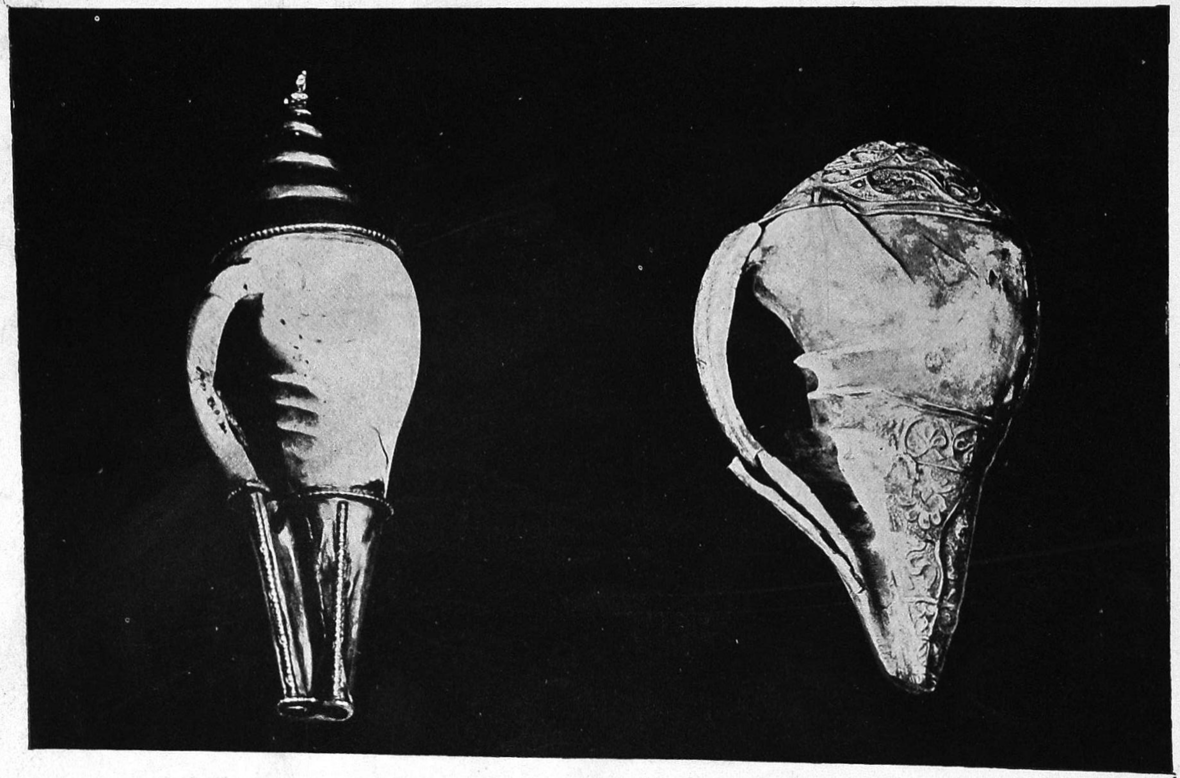
PATTERN RECONSTRUCTIONS OF SOME OF THE ANCIENT BANGLES IN THE FOOTE-COLLECTION.

[*Dorothy L. Hornell, del.*]



PATTERN RECONSTRUCTION OF SOME ANCIENT BANGLE FRAGMENTS IN THE FOOTE-COLLECTION. FOR COMPARISON WITH MODERN PATTERNS.

[*Dorothy L. Hornell, del.*]



FIGS. 1 AND 2.—SINISTRAL CHANKS (VALAMPURI SANKHU) RESPECTIVELY IN THE SHANK NARAYAN AND LAKSHMI TEMPLES, BET, KATHIAWAR.

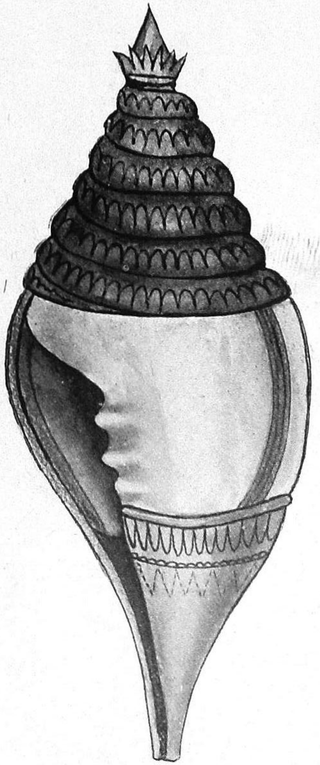


FIG. 1.

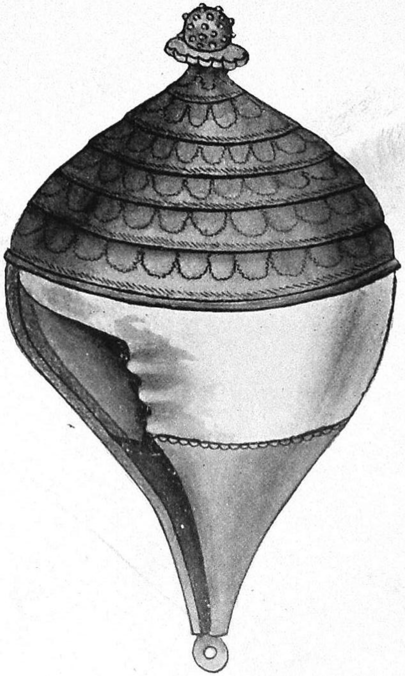


FIG. 2.

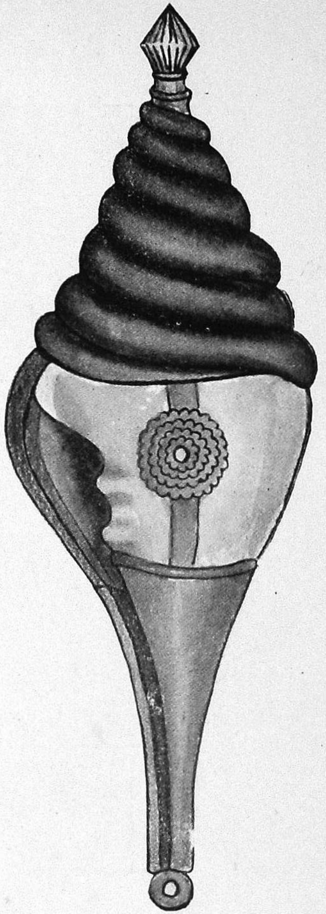


FIG. 3.

SINISTRAL CHANKS MOUNTED IN GOLD AND IN SILVER.

[*Dorothy L. Hornell, del.*]

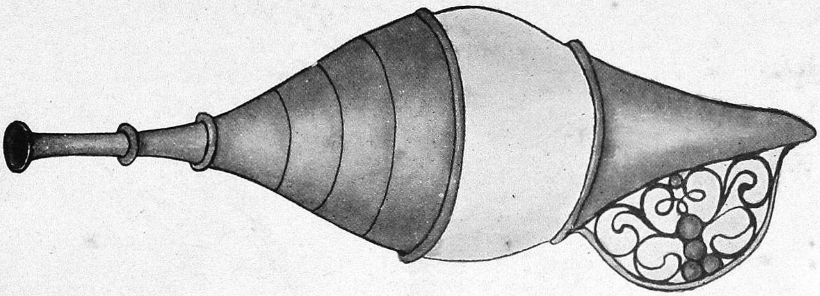


FIG. 1.—HANDSOME BRASS-MOUNTED CHANK USED IN THE TEMPLE SERVICES, UDIPI, S. CANARA.

FIG. 2.—A MALAYALI PILGRIM TO THE PALNI SHRINE IN MADURA DISTRICT.

[*Photo. by J. Hornell.*]

FIG. 1.—GROUP OF CHERUMAN WOMEN WEARING NECKLACES OF SO-CALLED CHANK-RINGS.

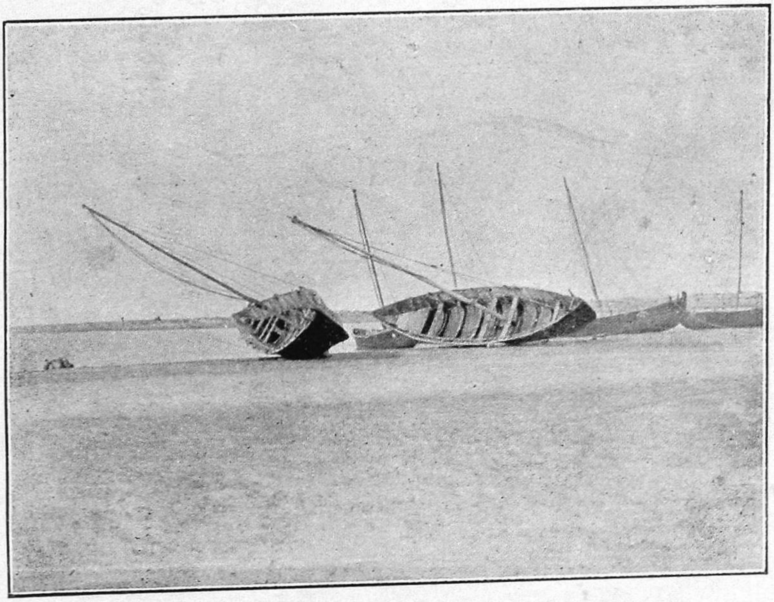


FIG. 2.—CHANK-FISHING CANOES DRAWN UP ON THE BEACH, TUTICORIN.

[*Photo. by J. Hornell.*]